TECHNICAL MANUAL

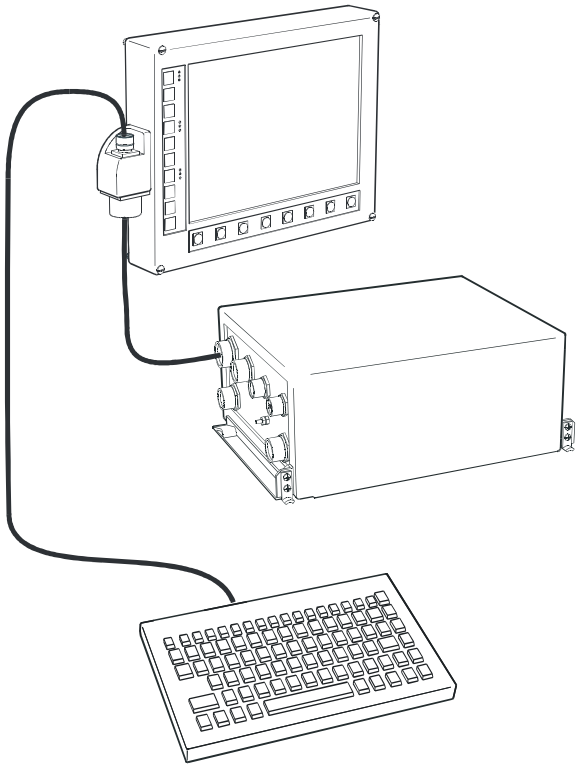
UNIT MAINTENANCE MANUAL

FOR

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW (FBCB2) (VERSION 3.4)

COMPUTER SET, DIGITAL AN/UYK-128(V)

AN/UYK-128(V)1 (NSN 7010-01-475-5277 (EIC: NA)
AN/UYK-128(V)2 (NSN 7010-01-475-5275 (EIC: NA)



HEADQUARTERS, DEPARTMENT OF THE ARMY
07 September 2001

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SAFETY, CARE, AND HANDLING

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1 **DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL WITH BARE HANDS**

2 **IF POSSIBLE, TURN OFF THE ELECTRICAL POWER**

3 **IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OF LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL**

4 **SEND FOR HELP AS SOON AS POSSIBLE**

5 **AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF THE ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START CARDIOPULMONARY RESUSCITATION (CPR)**

SAFETY SUMMARY

General Safety Precautions

For safety precautions during the maintenance of electrical/electronic equipment see TB 385-4 (Army)

For care and handling of electronics equipment see TM 43-0158 (Army)

WARNING

NiMH internal hold-up batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

Backlights in the display may break and leak Mercury and Lead. If Mercury and Lead are exposed, avoid contact with skin, eyes, and clothes, and don't breathe vapors. Immediately contact the proper authorities so that the spillage can be properly removed and if necessary, appropriate medical aid is administered. Dispose of Mercury and Lead IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

Lithium Carbon Monofluoride Complimentary Metal-Oxide Semi-Conductor (CMOS) button-cell internal back-up battery may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

Processor Units with internal Light Emitting Diodes (LED) diagnostic displays contain 9-volt non-rechargeable lithium batteries located in battery trays. Batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

The internal display inverters operate at high voltages. Electrical shock may occur and cause injury to personnel and/or death. Do not disassemble the display.

WARNING

When handling the Removable Hard Disk Drive Cartridge (RHDDC) wait at least 10 seconds after Processor Unit is Powered down, to allow the disk to stop spinning, before removing the RHDDC. The RHDDC can be hot. Burns may result. Allow RHDDC to adequately cool or use gloves prior to removing from Processor Unit.

WARNING

Inspect cables to ensure that they are properly dressed and stowed to prevent trip and snag hazards or damage to equipment.

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Not all Removable Hard Disk Drive Cartridge (RHDDC) models are interchangeable. Refer to the National Stock Numbers (NSN) and relevant technical manuals to determine compatibility with the Processor Unit (PU). Failure to comply with caution could result in system damage.

CAUTION

Water may enter Processor Unit. Before wash-down, ensure that the Removable Hard Disk Drive access door is closed and all connectors are properly covered with cable connectors or caps. Failure to do so may result in equipment damage.

VEHICLE-SPECIFIC WARNINGS

WARNING

HEMTT, HMMWV Ambulance, FMTV/LMTV

Display may obstruct view of windshield and right side window. Maximize driver field-of-view prior to vehicle operation.

WARNING

M35 2.5 Ton Truck, All HMMWV's variants, (except 1031, Ambulance, and Avenger)

FBCB2 display may obstruct the view of the front windshield and side mirror. Align display with A-Pillar prior to vehicle operation.

WARNING

M93A1 Fox, M113 Mid, M113 A3, FAASV

Trip Hazard, disconnect keyboard cable when stowed.

WARNING

All HMMWV variants, Fieldworks, Ace, M548 Volcano, HET, M93A1 Fox, HEMTT, 2.5 Ton Truck, 5-Ton Truck, DEUCE

Drivers viewing display while operating vehicle may result in personnel hazards/equipment damage. Drivers should not view display unit while vehicle is in motion, unless otherwise dictated by Standard Operating Procedures (SOP) unique to that platform.

TECHNICAL MANUAL
TM 11-7010-326-20 &P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC. 07 SEPTEMBER 2001

UNIT MAINTENANCE MANUAL
FOR
FORCE XXI BATTLE COMMAND
BRIGADE-AND-BELOW (FBCB2)
COMPUTER SET, DIGITAL AN/UYK-128(V)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, New Jersey 07703-5000. The fax number is 732-532-1413, DSN 992-1413. You may also e-mail your recommendations to AMSEL-LC-LEO-PUBS-CHG@cecom3.monmouth.army.mil. In either case a reply will be furnished direct to you.

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LIST OF ILLUSTRATIONS (Continued)

LIST OF TABLES

HOW TO USE THIS MANUAL

This Unit Level Technical Manual contains the information required to remove and replace each of the major subassemblies. The companion Technical Bulletin TB 11-7010-326-20, contains the information required to remove and replace the cables and attaching hardware. The equipment consists of the AN/UYK-128(V) computer with the following Government Furnished Equipment (GFE):

a. Single Channel Ground and Airborne Radio System Advanced System Improvement Program (SINCGARS ASIP) and/or
b. The Enhanced Position Location Reporting System (EPLRS), and
c. The Precision Lightweight GPS Receiver (PLGR), and
d. The Router (also known as the Internet Controller (INC))

This Technical Manual can be used to perform installation and removal of the major FBCB2 components. The Repair Parts and Special Tools List (RPSTL) helps to identify replacement parts when necessary.

The companion Technical Bulletin TB 11-7010-326-20, contains information to identify location information for each platform in Appendices A through AF.

TM 11-7010-326-20&P provides information to test and troubleshoot system failures. Once the failure has been isolated, removal replacement instructions are provided for FBCB2 equipment. TB 11-7010-326-20, Appendices A through AF provide removal replacement instructions for platform-specific hardware. This includes vehicle-specific assembly part numbers, location, mounting, and remove, replace instructions.

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CHAPTER 1 INTRODUCTION
TABLE OF CONTENTS

SECTION I. GENERAL INFORMATION

1–1 GENERAL INFORMATION

Figure 1–1 depicts the Digital Computer Set, AN/UYK-128 (V)1 & (V)2. The 10.4" display with any set of the other components constitutes a (V)1. The 12.1" display with any set of the other components constitutes a (V)2. A third display has the case size of the 10.4" display but a screen size of 12.1" display and therefore is considered (V)1 and (V)2. Figure 1–2 depicts the second version of the AN/UYK-128(V)1 & (V)2. The location of the Computer components, and the cable complement is different for each host platform. The basic components Display Unit (DU), Processor Unit (PU), and Keyboard Unit (KU) are interchangeable. Therefore, any PU may be combined with any DU and be programmed with any KU.

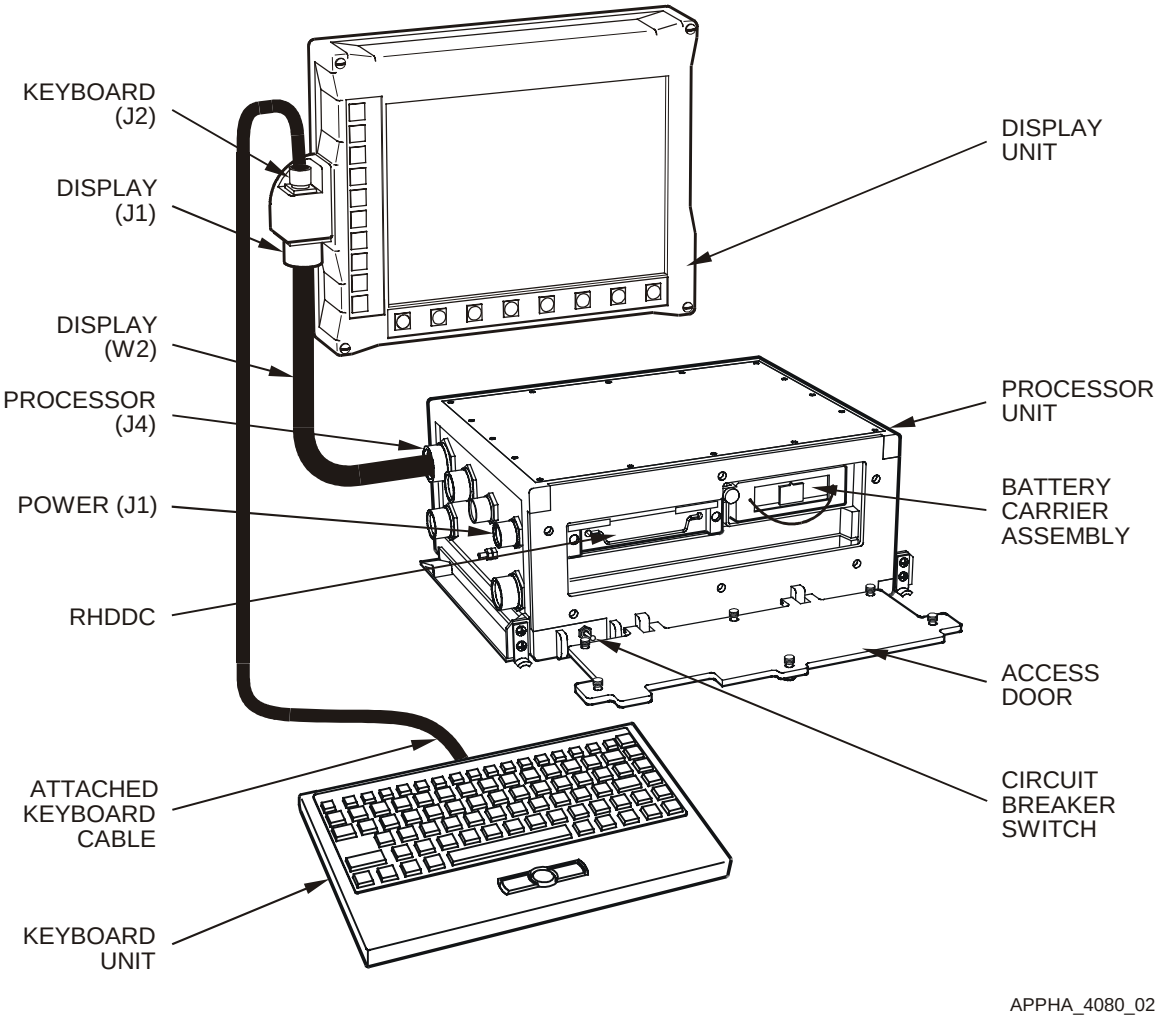

Figure 1–1. One Version Of AN/UYK-128(V) Computer

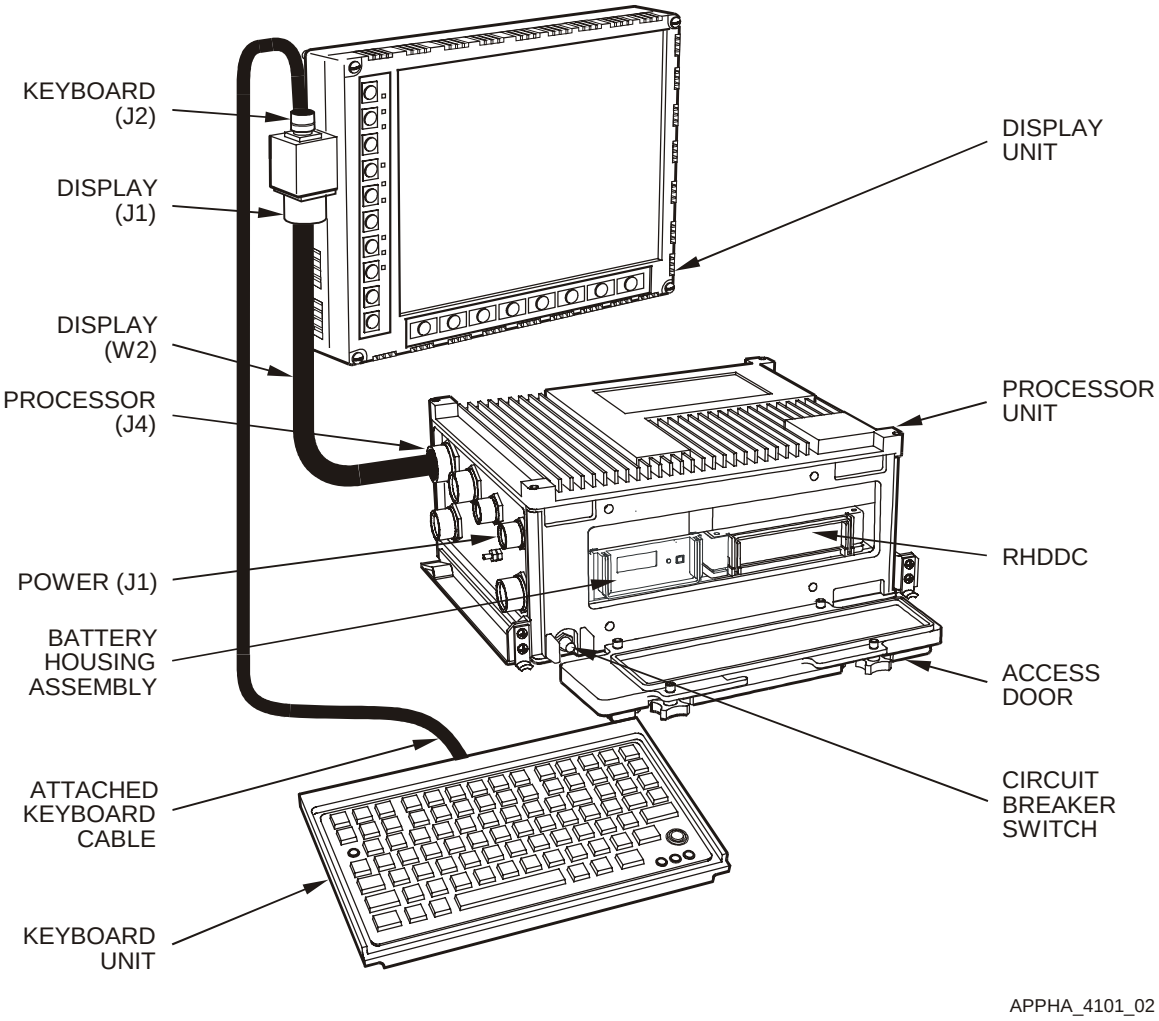

Figure 1–2. Second Version Of AN/UYK-128(V) Computer

1–2 FBCB2 SYSTEM

The FBCB2 system is an automated, computerized, digitized network, which provides brigade and below elements with a seamless battle command capability. The AN/UYK-128(V) computer allows each platform user in the network to send and receive information across the depth and breadth of the battlefield.

1–2.1 FUNCTIONALLY

The FBCB2 System facilitates the flow of battle command information and supports lower echelon battle command tactical mission requirements. Additionally, it inter-operates with Army and Joint Command and Control (C^2) and other sensor systems resulting in the vertical and horizontal information integration of the battlefield. This shared common picture of the battlefield provides the ability visually, to display, near-real-time Situational Awareness (SA) for the commanders, staffs, and soldiers.

1–2.2 SUBSYSTEM

Each AN/UYK-128(V) computer is a subsystem within the FBCB2 architecture. Installed in tactical vehicles, and weapons platforms, each AN/UYK-128(V) computer is tailored to a specific platform configuration and role or mission. The AN/UYK-128(V) computer consists of computer hardware, installation kit hardware, system operating software, and FBCB2 software. As a role-based information system, the AN/UYK-128(V) computer provides horizontal and vertical information exchange at all echelons, from platform to platform, within brigade size units.

1–3 CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS

Refer to the latest issue of DA Pam 25-30 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1–4 MAINTENANCE FORMS, RECORDS, AND REPORTS

1–4.1 REPORTS OF MAINTENANCE AND UNSATISFACTORY EQUIPMENT

Department of the Army (DA) forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, as contained in Maintenance Management Update.

1–4.2 REPORTING OF ITEM AND PACKAGING DISCREPANCIES

Fill out and forward SF 364 (Report Of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55.

1–4.3 TRANSPORTATION DISCREPANCY REPORT (TDR) (SF 361)

Fill out and forward Transportation Discrepancy Report (TDR) (SF 361).

1–5 DESTRUCTION OF ARMY MATERIEL

Comply with distribution statement and destroy by any method that will prevent disclosure of contents or reconstruction of the document.

1–6 ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will be checked for condition and completeness before storing. When removing the equipment from administrative storage, it should be checked for condition, completeness, cleanliness, and operational readiness.

1–7 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your AN/UYK-128(V) equipment or software needs improvement, let us know. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command (CECOM) and Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, New Jersey 07703-5000. The fax number is 732-532-1413, DSN 992-1413. You may also e-mail your recommendations to AMSEL-LC-LEO-PUBS-CHG@cecom3.monmouth.army.mil. In either case a reply will be furnished direct to you.

1–8 OFFICIAL NOMENCLATURE AND ABBREVIATIONS/ACRONYMS LIST

1–8.1 OFFICIAL NOMENCLATURE AND DEFINITIONS

The following lists the nomenclature and definitions as used in this manual.

Common Name	Official Nomenclature	Definition
FBCB2 System	Force XXI Battle Command Brigade-And-Below (FBCB2).	Consists of the AN/UYK-128(V) computer, operational software, the Precision Lightweight GPS Receiver (PLGR), the Single Channel Ground and Airborne Radio System Advanced System Improvement Program (SINCGARS ASIP), the Enhanced Position Location Reporting System (EPLRS), and the Internet Controller (INC).
AN/UYK-128(V) computer	Computer Set, Digital AN/UYK-128(V)	Basic hardware: Processor Unit, Display Unit, Keyboard Unit, and Removable Hard Disk Drive Cartridge.
Processor Unit (PU)	Processor Unit (PU).	Performs all the central processing for the AN/UYK-128(V) computer, and contains an internal power supply which provides all the internal and external voltage requirements.
Display Unit (DU)	Display Unit (DU)	Provides for the visual display of information to the operator. Provides for the application of power. The Touch screen provides one method of Soldier-Machine Interface (SMI) with the AN/UYK-128(V) computer.
Keyboard Unit (KU)	Keyboard Data Entry	Provides two methods of Soldier-Machine Interface (SMI). The first method being the keyboard keys and the second being the mouse pointer device.
Removable Hard Disk Drive Cartridge (RHDDC).	Disk Drive Unit	A protective case that contains the Hard Disk Drive, a non-volatile mass storage system, which stores the operating system, the software, and the operator-generated files.
FBCB2 Software	FBCB2 Operating System Software	Consists of UNIX Solaris and Embedded Battle Command (EBC) Software. Provides the graphic displays, the operations and the interface that allows the operator to perform his/her mission.
Installation Kit	Installation and Equipment, Data Processing.	Contains the associated cables and mounting hardware needed to install the AN/UYK-128(V) computer system into specific platforms.

1–8.2 ABBREVIATIONS/ACRONYMS LIST

This listing includes the applicable AN/UYK-128(V) abbreviations and acronyms.

ACRONYM	DESCRIPTION
BIT	Built-In-Test
BIOS	Basic Input/Output System
CHAS	Chassis
CMOS	Complimentary Metal-Oxide Semi-Conductor
CPU	Processor Unit
dC	Diagnostic Code
DTD/MDL	Data Transfer Device/Mission Data Load(er)
DU	Display Unit
DISP	Display
EBC	Embedded Battle Command
EIAD	Expansion Interface Adapter Device
ESD	Electrostatic Discharge
ESDS	Electrostatic Discharge Sensitive
FBCB2	Force XXI Battle Command Brigade-and-Below
FP	Fault At Post
I/O	Input/Output
KU	Keyboard Unit
LRU	Line Replaceable Unit
POST	Power-On-Self-Test
PPP	Point-to-Point Protocol
PU	Processing Unit
PWR	Power
RHDDC	Removable Hard Disk Drive Cartridge
SIAD	Serial Interface Adapter Device
SICPS	Standardized Integrated Command Post Shelter
SVGA	Super Video Graphics Array
USB	Universal Serial Bus

1–9 WARRANTY INFORMATION

The AN/UYK-128(V) is warranted in accordance with the date found in block 23, of DA Form 2408-9 of the logbook. Also, refer to TB 11-7010-326-30 for further information regarding warranty. Report all defects to your supervisor, who will take appropriate action.

1–10 SAFETY, CARE, AND HANDLING

The following highlights the safety, care, and handling concerns for AN/UYK-128(V) equipment.

a. Mechanical - The heaviest Line Replaceable Unit (LRU) is the PU which is 18.6 pounds with the Removable Hard Disk Drive Cartridge (RHDDC).
b. Acoustical - AN/UYK-128(V) noise is generated by the internal fans. The noise level is insignificant.
c. Electrical - The highest voltage in AN/UYK-128(V) is +33VDC.
d. Ionizing Radiation's - No x-ray or other ionizing radiation.
e. Radioactive Materials - None used in AN/UYK-128(V).
f. Toxic Materials - AN/UYK-128(V) uses a Lithium clock battery and Mercury lamps for display backlights. The battery is so small that the Lithium content is well below the amounts permitted by Federal Regulations for use in a confined area.
g. Software Safety - Software malfunction cannot damage the AN/UYK-128(V).

1–11 CORROSION PREVENTION AND CONTROL (CPC)

Internal and external equipment is protected IAW MIL-F-7179. The Chemical Agent Resistant Coating (CARC) topcoat complies with MIL-C-46168 type IV, color green 383.

1–12 NUCLEAR HARDNESS

Not applicable.

1–13 SECURITY MEASURES FOR ELECTRONIC DATA

Hardware security is aided by padlocks for the Processor Unit (PU) Removable Hard Disk Drive Cartridge (RHDDC), Display Unit, and Keyboard stowage box. Security classification is presented at the top of every display screen.

SECTION II. EQUIPMENT DESCRIPTION AND DATA

1–14 EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The lists below supplies the required information for the AN/UYK-128(V) equipment.

1–14.1 CHARACTERISTICS

Processor	333 MHz Pentium II minimum.
Display	800 X 600 Sunlight Readable Color
Operating Temperature	-25° F (-32° C) to 140° F (60° C)

1–14.2 CAPABILITIES AND FEATURES

1–14.2.1 COMMUNICATIONS

Permits real-time requests for fuel, ammunition, food, etc., or maintenance assistance from platform level.

1–14.2.2 SITUATIONAL AWARENESS

Disseminates automatic position reports frequently enough to provide sufficient location information for combat identification and situational awareness purposes. Provides the capability to ascertain friend/unknown identification to decrease fratricide.

1–15 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Figure 1–3 through Figure 1–6 show the basic components of the AN/UYK-128(V) computer. Computer location differs by platform. Information for specific platforms can be found in the appendices of TB 11-7010-326-20. The Appendices in TB 11-7010-326-20 contain the details of the cables and brackets for each specific platform.

1–15.1 DISPLAY UNITS

Figure 1–3 shows the three configurations of the Display Unit (DU). The display units are supplied in two screen sizes, 10.4” and 12.1”. Both configurations are sunlight readable. The screens are touch-activated by fingers or stylus. Function Keys can be activated by the operator while wearing MOPP IV gloves using the stylus. The left side connectors accept the cables which interface the display unit to the PU and KU. The 10.4” screen may be configured similar to the 12.1” or it may have function keys along the bottom. All three configurations are plug-in compatible.

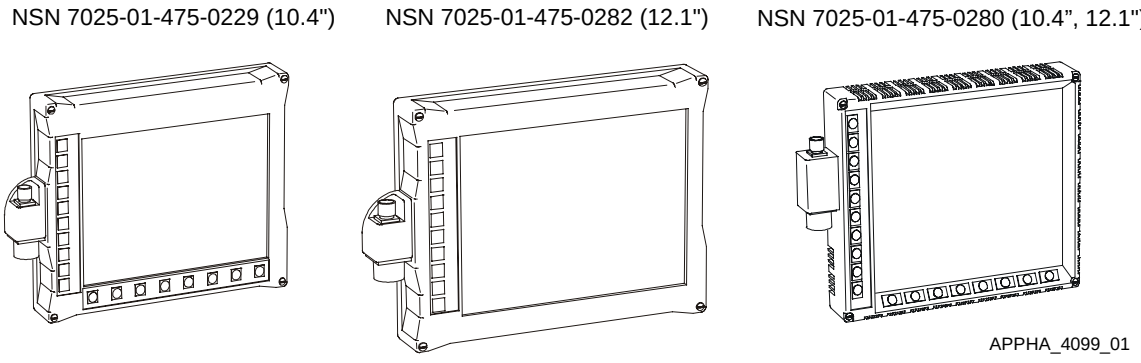

Figure 1–3. Three Display Units (DU)

1–15.2 PROCESSOR UNITS

Figure 1–4 shows the two Processor Unit (PU) configurations. Both configurations have an access door that provides access to the RHDDC and Battery Tray/Battery Box. The access door must remain closed (secured) during wash-down procedures. Figure 1–5 shows the cable side of the PU with the Chassis E1 ground connection and six connectors. J1 is the 28 VDC input. J2 provides audio from a 1 Watt stereo amplifier as well as a monaural Input/Output (I/O). J3 provides an asynchronous EIA-232 COM B (COM 2) serial port, plus four additional asynchronous EIA-232/422/423 compatible serial ports. J4 provides all the display power and video requirements for the Display Unit. J4 also provides power to the Keyboard Unit (KU) and a Universal Serial Bus (USB) for the KU. J5 is the interfaces supporting both 12Mbps and 1.5Mbps used by some configurations. J6 provides the Super Video Graphics Array (SVGA) interface which supports both the analog video for a Cathode Ray Tube (CRT) type video monitor and digital video for a flat panel Liquid Crystal Display (LCD).

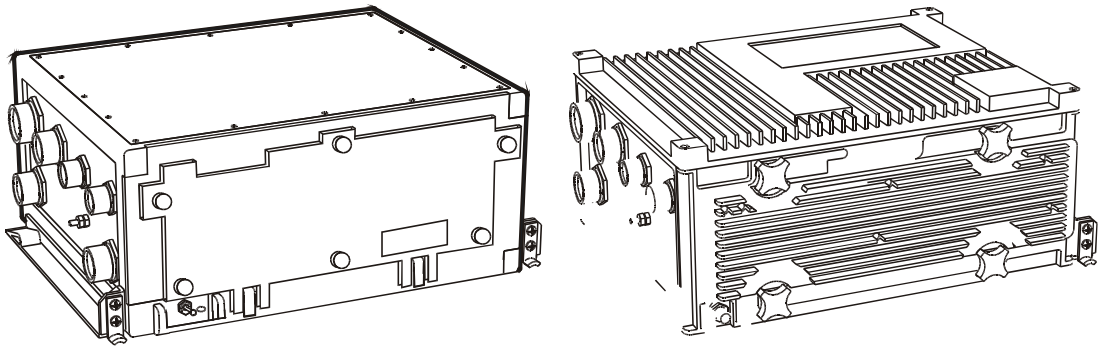

Figure 1–4. Two Types of Processing Units

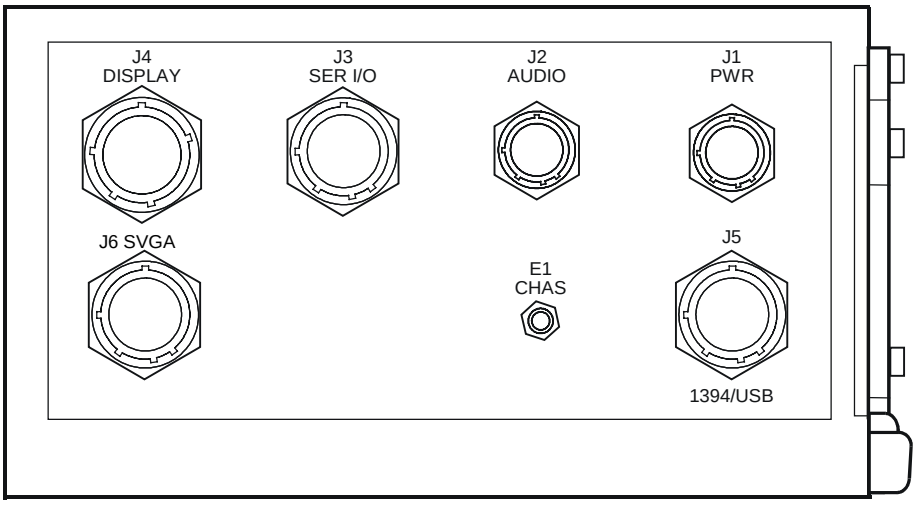

Figure 1–5. Connector Side of Processor Units

1–15.3 KEYBOARD UNITS

Figure 1–6 shows details of the two Keyboard Unit (KU) configurations. Each key is back lit for night time visibility. The back lighting is adjustable to a level low enough to avoid detection. Back light adjustments are in the keyboard controls. Keyboard is in the normal QWERTY configuration. The mouse and mouse-switch buttons are part of the keyboard.

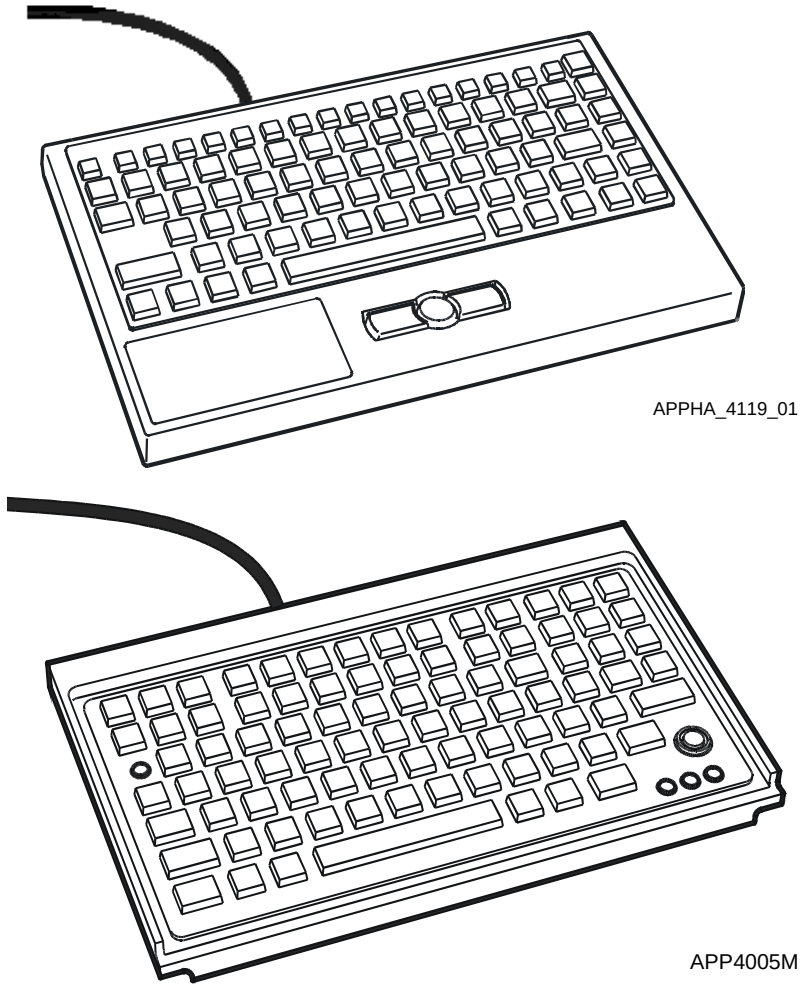

Figure 1–6. Two Types of Keyboard Units (KU)

1–16 DIFFERENCES BETWEEN MODELS

Platform differences determine the configuration. The AN/UYK-128(V) computer components are common for all platforms, while the remaining hardware (cables, mounting brackets, etc.) tailors AN/UYK-128(V) computer to the platform. There are three types of display 1-10.4", 1-1.4"/12.1" and 1-12.1") installed in the vehicles. In some installations, a PU Thermal Guard (Figure 1–7) covers the top of the PU for handling protection. All PU, DU, and KU parts of the AN/UYK-128(V) computer are interchangeable. Each PU contains a Removable Hard Disk Drive Cartridge (RHDDC) and back-up battery. The RHDDC and battery are not interchangeable. Listed below are the two PU types and identification by the National Stock Number (NSN) of the mating Removable Hard Disk Drive Cartridge (RHDDC) and battery assemblies. (See Table 1-1.)

Table 1-1. Device Identification

DEVICE	IDENTIFICATION	DEVICE	IDENTIFICATION
Computer (PU)	NSN 7021-01-474-3793 or NSN 7021-01-487-0578	Computer (PU)	NSN 7021-01-475-0217 or NSN 7021-01-487-0579
Removable Hard Disk Drive Cartridge (RHDDC)	NSN 7025-01-474-3789 or NSN 7025-01-487-0580	Removable Hard Disk Drive Cartridge (RHDDC)	NSN 7025-01-474-5753
Battery Tray	P/N 0410-06558-0000	Battery Box	P/N 59755-1

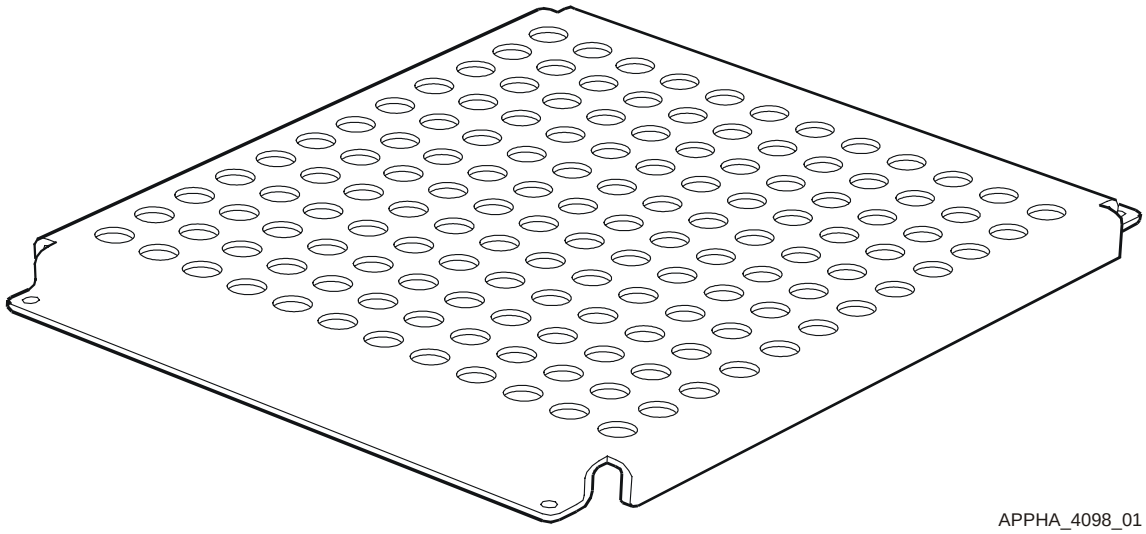

Figure 1–7. PU Thermal Guard P/N 872860-1

1–17 INSTALLATION HARDWARE

The AN/UYK-128(V) computer components are attached to the platform with various mounts, brackets, and cable configurations. These are supplied in the form of installation kits for each platform shown in Table 1-2. The first column 'APP' stands for the Appendix letter in TB 11-7010-326-20. The second column contains the 'Platform' or vehicle information in the applicable appendix. The part numbers are listed in each vehicle appendix in TB 11-7010-326-20.

Table 1-2. AN/UYK-128(V) Platforms (TB 11-7010-326-20)

APP.	PLATFORM	APP.	PLATFORM
A	M109A6 Paladin	N	M998 Avenger
B	M1064 Mortar	P	M1031 CUCV Shop Van
C	M981 FIST-V	R	M985/978/1074/1075 HEMTT/PLS
D	M9 ACE (DOZER)	S	M923 5-Ton
E	M60 AVLB/M	T	M1037/1097 RWS
F	M548A3 Volcano	U	M992 FAASV
G	M577 MORTAR (FDC)	V	M1068 Brigade (MN)
H	M577 MEDICAL	W	M1068 Battalion (SICPS)
I	M113 Common	X	M1068 FDCV
J	M88A1 HERCULES	Y	M934 EXPANDO VAN
K	M998/M1026/M1038 HMMWV With INTEGRATED RACK	Z	M35A3 2 ½-Ton Cargo Carrier
L	M997 HMMWV Ambulance	AA	M1070 Heavy Equipment Transport (HET)
M	M93A1 Fox (NBC)	AB	SICPS Tent

1–17.1 PU THERMAL GUARD

NOTE

The PU Thermal Guard Assembly P/N 872860-1 is utilized on M113 Common, M1031 CUCV, M93 FOX, M9 ACE, M998/M1026/M1038 HMMWV I-Rack, and M 923 5-Ton platforms.

The top of the PU may get hot during normal operation. To protect the soldier from possible burns, some installation configurations use the thermal guard shown in Figure 1–7. The guard is mounted on the top of the PU with four (4) captive screws, one in each corner. Specific vehicle installation requirements are unique, therefore not every installation has need for this guard.

1–17.2 GENERAL SPECIFICATIONS

General information for each subassembly. There are two configurations of each subassembly with the PU, DU, and KU physically and electrically interchangeable. The RHDDC and back-up batteries are not interchangeable.

1–17.3 PROCESSING UNIT (PU)

Refer to Table 1-3 for (PU) data. The internal power supply converts the incoming 20 – 33VDC to voltages required by the Processor Unit, the Display Unit, and the Keyboard Unit. Temperature sensors respond to over temperature conditions by stuttering the clock (changing the clock speed). The Input/Output (I/O) data is listed in Table 1-3.

Table 1-3. Processor Unit (PU) Data

ITEM	DATA
PU	Single, 333 MHz Pentium II; 192 MB memory, and 256KB cache minimum
RHDDC	Includes a removable disk cartridge with a 6 GB capacity (minimum).
I/O	10Base-2 Ethernet, 1 external RS-232 port and four additional EIA-422/EIA-423 compatible asynchronous ports

1–17.4 DISPLAY UNIT (DU)

There are two sizes of sunlight-readable color displays with 800 x 600 resolution and a wide viewing angle. Sunlight readability is provided by high-output back lights. Brightness is controlled by a micro controller using pulse-width modulation and back light voltage variations to achieve a wide dynamic range of intensity. The two lowest illumination levels (of 10) are for night-time use only. Power management firmware responds to temperature sensor inputs by reducing the back light intensity. There are two LCD size configurations: 12.1” and 10.4”.

1–17.5 KEYBOARD UNIT (KU)

The two Keyboard Units have standard QWERTY type keyboard with adjustable back lit keys for night use. Rubberized covering over the keyboard prevents contamination from sand, dirt, and liquids. The NSN 7025-01-474-3791/NSN 7025-01-487-0581 keyboard has a built-in mouse consisting of a center control element with right and left selector buttons located in the center of the forward apron. The NSN 7025-01-474-3792 keyboard has a built-in mouse consisting of a control element and two selector buttons located in the lower-right corner. The keyboard is covered by a molded “rubber” membrane, has QWERTY keyboard layout with sculpted keys. Keys are backlit, with a six-level brightness control that will lower light intensity for night use. The keyboard unit interfaces with the Processor Unit (PU) via a connector on the display unit. The Keyboard Unit cable is hardwired.

1–17.6 REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

There are two types of Removable Hard Disk Drive Cartridge (RHDDC). They are both accessible through a hinged access door on the front of the Processor Unit. The two types of RHDDC are not interchangeable between the two versions of PU.

1–17.7 PHYSICAL SPECIFICATIONS

Available in the Operators Manual TM 11-7010-326-10.

1–18 THERMAL MANAGEMENT

The Processor Unit and Display Unit have the capability to reduce power consumption and heat dissipation at high operating temperatures to prevent equipment damage . These reductions are achieved by reducing the back light intensity to levels used by a standard active matrix notebook computer display and by reducing PU throughput by “stuttering” the clock. “Stuttering” the clock shortens the ON portion of the clock cycle to reduce generated heat.

1–19 POWER: 28VDC

The PU operates directly from 28VDC vehicle power. The PU also includes provisions to make use of a BB-388/U Rechargeable Battery as a holdup power source. The holdup batteries allow shutdown of the AN/UYK-128(V) Computer in the event of vehicle power loss. Key characteristics of the battery include:

a. 13.2 Volts output with 1.5 Ampere Hour rated capacity, sealed design, with Nickel Metal Hydride chemistry and visible state of charge indicator.
b. The AN/UYK-128(V) computer is capable of a minimum of 10 minutes of continuous operation from a fully-charged BB-388/U battery following removal of primary power from the power input at 68 to 77 degrees F (20 to 25 degrees C) ambient air temperature.
c. Opening the PU circuit breaker (main power switch) the battery is taken-out-of-circuit. At the same time, the battery remains in-circuit when the circuit breaker is on and the DU power switch is off.
d. The PU includes a battery charging capability sufficient to place a full-charge on the BB-388/U battery over the course of 8 hours of charging at 68 to 77 degrees F (20 to 25 degrees C) ambient air temperature.
e. Charging is performed whenever the battery is installed, the battery temperature is within operating limits, and the PU's circuit breaker is in the "On" position.
f. The BB-388/U battery is installable or replaceable by the user.
g. The replaceable battery configuration is not the same for the National Stock Number (NSN) NSN 7021-01-474-3793/NSN 7021-01-487-0578 PU as it is for the NSN 7021-01-475-0217/NSN 7021-01-487-0579 PU and therefore they are not interchangeable.
h. The NSN 7021-01-474-3793/NSN 7021-01-487-0578 AU/UYK-128(V) computer contains a single BB-388/U battery and a 9 Volt non-chargeable battery used for the self-test Liquid Crystal Display.
i. The NSN 7021-01-475-0217/NSN 7021-01-487-0579 contains two BB-388/U batteries.
j. If the PU circuit breaker is left on for an extended period, it can drain the vehicle batteries.

1–20 POWER DISTRIBUTION

a. Prime power is provided by the host platform directly to the PU. Figure 1–8 shows power (PWR) distribution (what voltage is on which pin) for the AN/UYK-128(V) computer subassemblies.

NOTE

When W2 is disconnected (either end) the PWR ON logic (W2-P1-19) is missing. With the power on logic missing, the PU will not operate and none of the display or keyboard voltages shown can be measured.

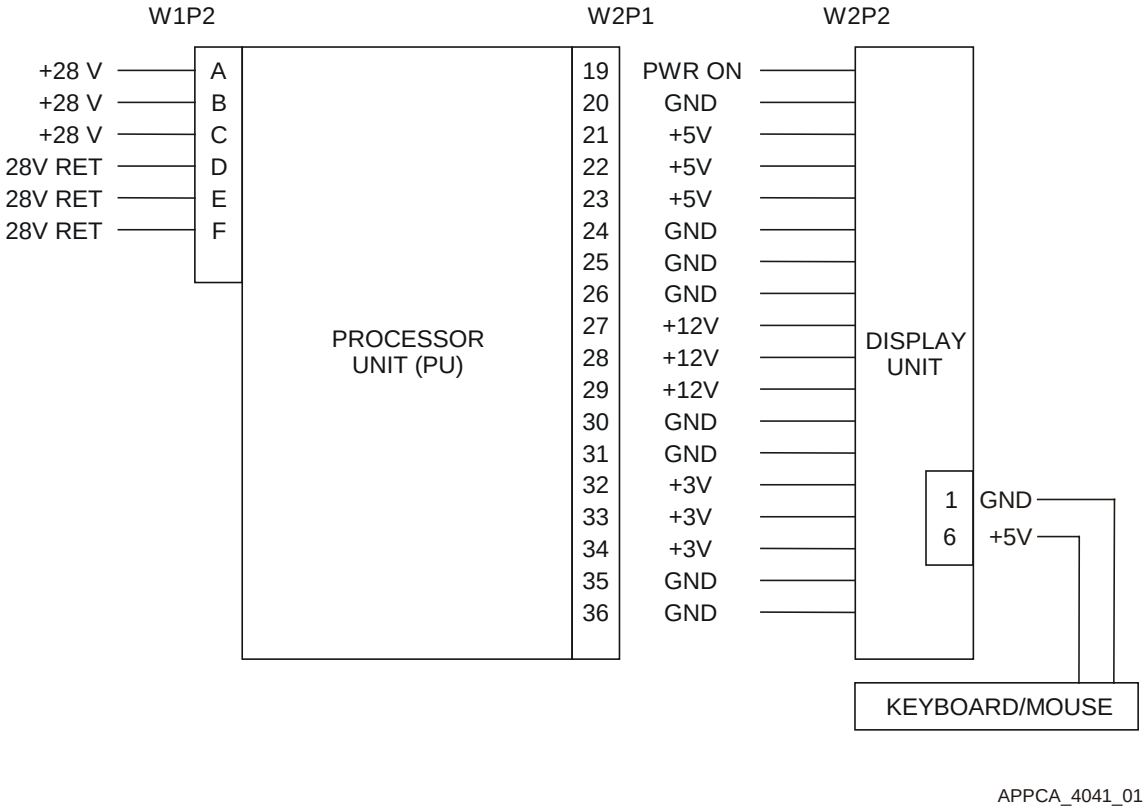

Figure 1–8. Power Distribution

b. Power requirements are as follows in Table 1-4.

Table 1-4. Power Requirements Configuration

MODE	VOLTAGE	WATTS
Power-Up	23 VDC - 28 VDC	80 Nominal

1–21 SYSTEM INTERFACES

System interfaces vary with platform type. The following two figures show two typical of platform interface configurations. Refer to Technical Bulletin TB 11-7010-326-20 for detailed interface configuration for specific platforms. Figure 1–9 shows the vehicle system interface with intercom. Figure 1–10 shows the vehicle system interface without an intercom.

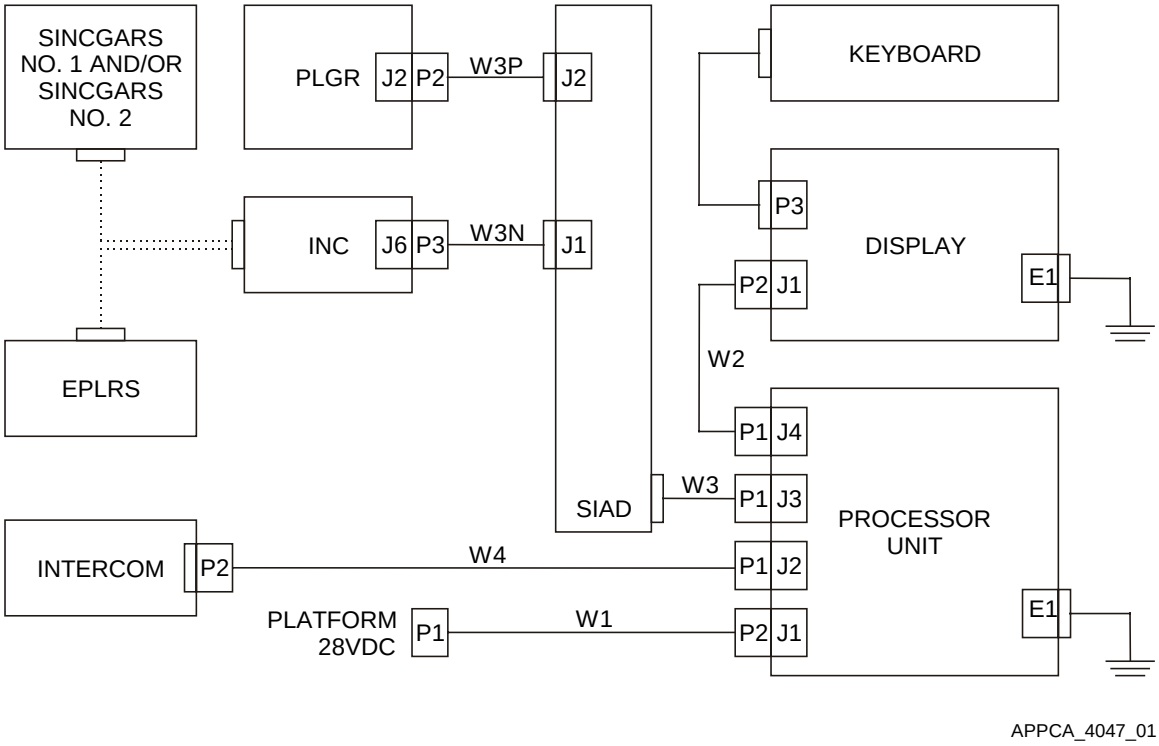

Figure 1–9. Vehicle System Interface With Intercom

1–21 SYSTEM INTERFACES (Continued)

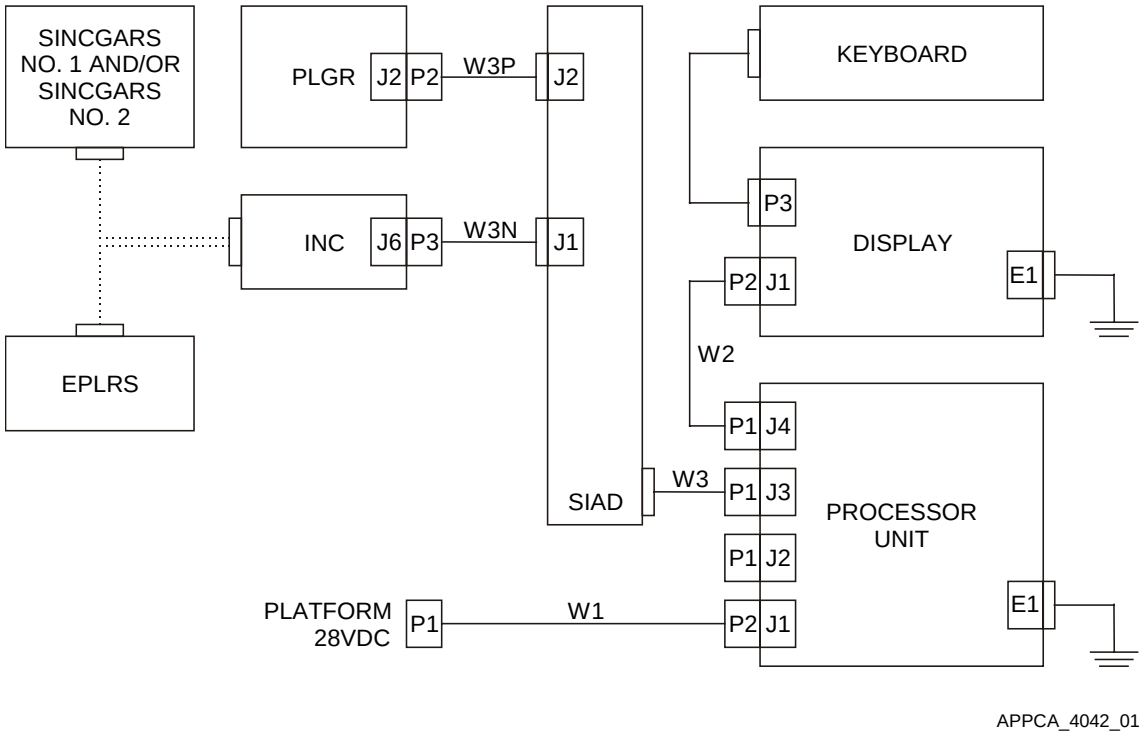

Figure 1–10. Vehicle System Interface Without Intercom.

1–21.1 GLOBAL POSITIONING SYSTEM (GPS) INTERFACE

The Precision Lightweight GPS Receiver (PLGR) provides the time of day and location reference for the AN/UYK-128(V) computer system. For PLGR operating instructions, refer to Appendix A References.

1–21.2 INTERNET CONTROLLER (INC) INTERFACE

The INC module is a router located in the AM-7239/VRC SINCGARS Vehicular Amplifier Adapter (VAA) assembly. The INC to AN/UYK-128(V) interface is accessed at connector A2 J6 of the VAA. The INC interface to the AN/UYK-128(V) has the option to interface to either one or two SINCGARS Radios and an EPLRS.

1–21.3 RADIO INTERFACE

The INC to SINCGARS Radio interface is compliant with MIL-STD-188-220A protocol, supporting both Type 1 and Type 4 data link protocol operations.

1–21.4 EXPANSION INTERFACE

There are two expansion devices available to various AN/UYK-128(V) configurations.

a. The Serial Interface Adapter Device (SIAD) cable connected to J3 of the PU has one output (J1) for the INC and a second output (J2) for the PLGR. These are the most common connections. This same SIAD assembly has three additional serial connectors for future expansion, J3, J4, and J5.
b. The W5 cable assembly is the Expansion Interface Adapter Device (EIAD) that connects to the Universal Serial Bus (USB) connector PU-J5. The W5 cable is used in the Standardized Integrated Command Post Shelter (SICPS) tent configuration but may be used with any vehicle requiring a 10/100 BASE-T Ethernet interface.

1–21.5 MISSION DATA LOAD (MDL) INTERFACE

The MDL may be connected to the AN/UYK-128(V) Processor Unit or to the Display Unit. Figure 1–11 and Figure 1–12 illustrate the two MDL cable connection configurations for the AN/UYK-128(V) Computer. Figure 1–13 illustrates the MDL connection to the TOUGHBOOK Computer.

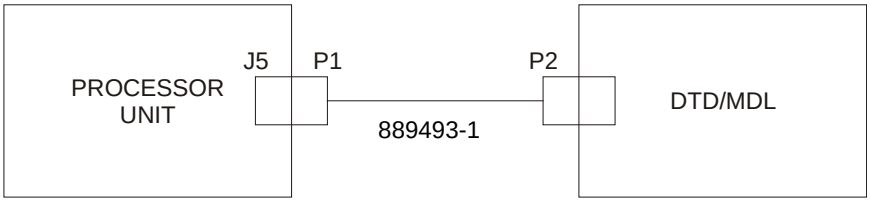

Figure 1–11. DTD/MDL to AN/UYK-128(V) PU Connection Diagram

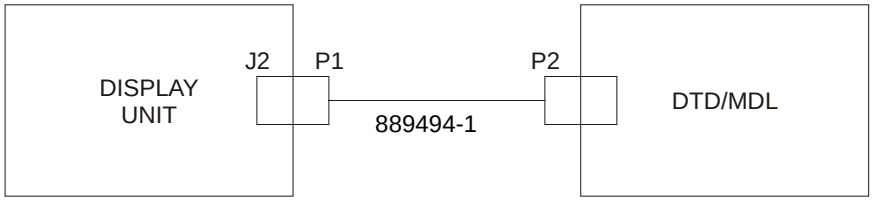

Figure 1–12. DTD/MDL to AN/UYK-128(V) DU Connection Diagram

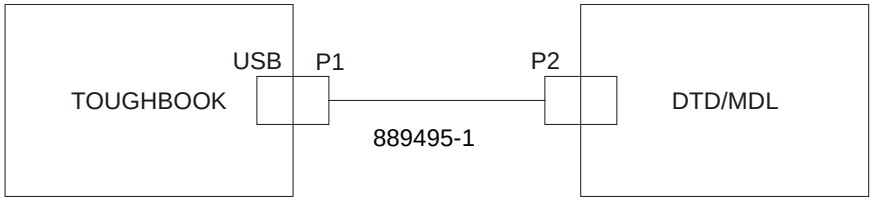

Figure 1–13. DTD/MDL to TOUGHBOOK Connection Diagram

SECTION III. AN/UYK-128(V) PRINCIPLES OF OPERATION

1–22 OVERVIEW

FBCB2 is an automated, role-based information system which provides horizontal and vertical information exchange at all echelons, from platform to platform, and from platforms through commanders, within Brigade (BDE) sized units and between BDEs. FBCB2 provides the ability to display SA information (e.g., position), distribute C2 messages (e.g., alerts and warnings), develop and distribute unit task organization and reorganization data; process and display status information (provided by weapons systems, sensors, and support platforms), prepare and distribute orders, and receive/develop/distribute a common battlefield picture. Visual displays maximize graphical orientation to a digital map, and minimize tedious textual displays and keyboard interaction. FBCB2's use of radios for data sharing also permits commanders and staff to remotely operate and maintain database connectivity when away from their command posts (operating on-the-move), and to digitally control and monitor their subordinate units' status and position. The two primary operational system capabilities supported by FBCB2 are Battle Command (the art and science of battle decision-making, leading, and motivating soldiers and their organizations into action to accomplish specific missions) and Battle Command Support (mission planning, rehearsal, and execution support required for current and future operations).

1–23 SYSTEM PURPOSE

The AN/UYK-128(V) combines information received over the Tactical Internet with information from the Precision Lightweight GPS Receiver (PLGR), and other vehicle systems and subsystems, and processes this information for the operator. This data will include maps showing ground tracks, air tracks, ground units, enemy units, ownership position, and overlays. The AN/UYK-128(V) relays information regarding network status, warnings, cautions, track correlation, and coordinate conversions through the display and the intercom system. AN/UYK-128(V) will also post its own location, heading, and other information to the Tactical Internet. To do this, the AN/UYK-128(V) can send messages through the Enhanced Position Location Reporting System (EPLRS) and Single Channel Ground and Airborne Radio System (SINCGARS). These peripherals are provided as Government Furnished Equipment (GFE).

1–24 OPERATIONAL CONCEPT

FBCB2 is both a system and a concept to be used with all battlefield operating systems, including maneuver, fire support, air defense, Command and Control (C2), intelligence mobility and survivability, and combat service support units performing missions across the operational continuum at the tactical level of war. FBCB2 provides a seamless holistic Battle Command capability and increased battlefield operational capabilities through the implementation of information-age technology. FBCB2 provides Situational Awareness (SA) and C2 to the lowest level platforms/soldiers on the battlefield. Aggregation of individual subsystems will establish a computerized digital tactical network linking all battlefield-automated systems, resulting in one homogenous battle command operational architecture throughout all facets of the brigade structure.

1–25 POWER INTERFACE

The AN/UYK-128(V) computer operates from an external power source, 28 VDC nominal. For installed equipment, this power source is provided by the host platform. For bench-checked equipment, a separate power source is used.

The AN/UYK-128(V) computer provides protection against power ripple, surge and spike voltage conditions through use of internal power hold-up batteries. A rechargeable, Nickel Metal Hydride (NiMH) battery provides internal power holdup during low voltage conditions to allow proper shutdown of the AN/UYK-128(V) Computer. The Processor Unit (PU) can recharge these internal power hold-up batteries while the PU is operating. The internal power hold-up batteries are located in the PU battery box or battery tray (depending on PU version) located behind the access panel. The battery tray/battery box contains a voltage/state-of-charge indicator which can be used to determine the state of charge of the batteries without requiring that external power be applied to the PU to use the indicator. Figure 1–14 shows the interface for the AN/UYK-128(V) Computer.

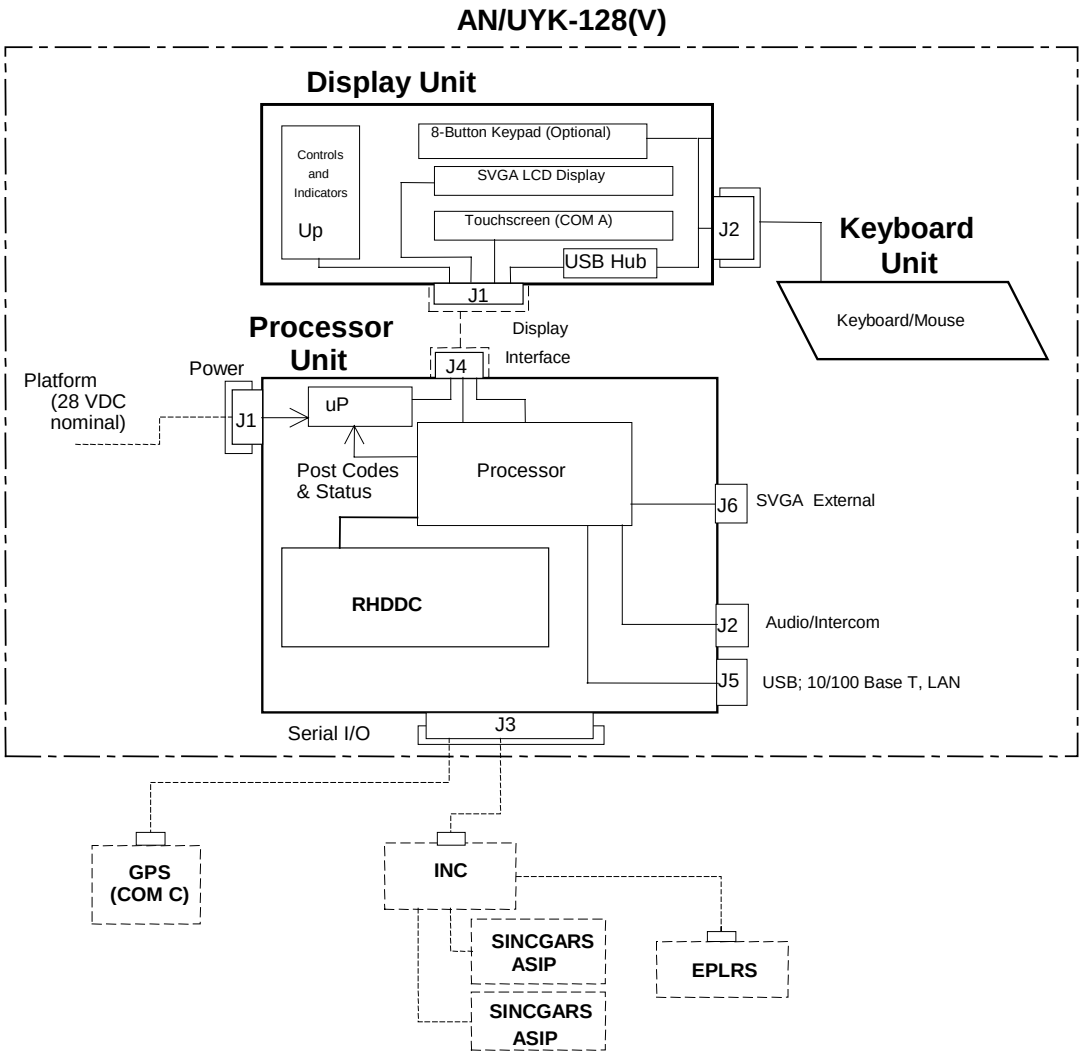

Figure 1–14. Computer System Interface

1–26 REMOVABLE HARD DISK DRIVE CARTRIDGE INTERFACE

A Removable Hard Disk Drive Cartridge (RHDDC) is located behind the access panel in both versions of the PU. There are two different RHDDC, one for each PU version, which are not interchangeable.

1–27 PRECISION LIGHTWEIGHT GPS RECEIVER (PLGR) INTERFACE

PLGR information is available via an Electronic Industries Association (EIA)-422 serial interface. Only the Time Mark Message is accepted from the PLGR (including position, navigation, timing, PLGR-unique data and satellite almanac, current ephemeris, and current year data). Interface is between the PLGR J2 and SIAD J2 connector using a W3P cable, and SIAD J2 connector and the PU J3 connector using a W3 cable.

1–28 DISPLAY UNIT (DU) INTERFACE

The DU to PU interface is the conduit for several types of data: video/graphics, keyboard, touch-screen, power, and discrete signals. Interface is between the DU J1 connector and PU J4 connector using a W2 cable.

1–29 KEYBOARD INTERFACE

The keyboard controller provides the interface to the detachable QWERTY keyboard, the embedded pointing device, the alarm circuitry and the status indicators. The keyboard is a membrane switch assembly. The DU provides one connector for connection to the keyboard assembly. The Keyboard Unit end of the interface cable is hardwired to the Keyboard. The Keyboard Unit connects to J2 of the DU.

1–30 INTERCOM INTERFACE

AN/UYK-128(V) computer audio output is connected in parallel with the headphone audio output via an adapter cable W4. The W4 cable connects to the Processor Unit via connector J2.

1–31 LAN INTERFACE

LAN interface is available at the Processor Unit via the J5 connector.

SECTION IV. LOWER TACTICAL INTERNET THEORY OF OPERATION

1–32 UPPER AND LOWER TACTICAL INTERNET OVERVIEW

The Tactical Internet (TI) consists of two primary segments, a Lower TI and an Upper TI. The Upper TI has a Near Term Digital Radio (NTDR) Network and a Mobile Subscriber Equipment (MSE) user switching communications system. This section is a description of the Lower TI, hence unless otherwise stated any reference to the TI refers to the Lower TI. The Lower TI provides the digital communications capability for Brigade-and-Below elements not located at Tactical Operations Centers (TOCs). The Upper TI provides the mechanisms for digital communications between Brigades, above Brigades, and between TOCs at all echelons. The two segments of the TI are designed to provide seamless data transfer throughout the digitized battlefield. The relationship between the Upper TI and the Lower TI is shown in Figure 1–15. At the lowest levels, communication is accomplished with SINCGARS Stub Nets. The EPLRS radios are used to provide the communications backbone within Battalions (BN) and across the Brigade. Each host connected to the TI regardless of its communication resources, has a unique Internet Protocol (IP) address, which uniquely identifies it to other hosts at the Open Systems Interconnection (OSI) network layer.

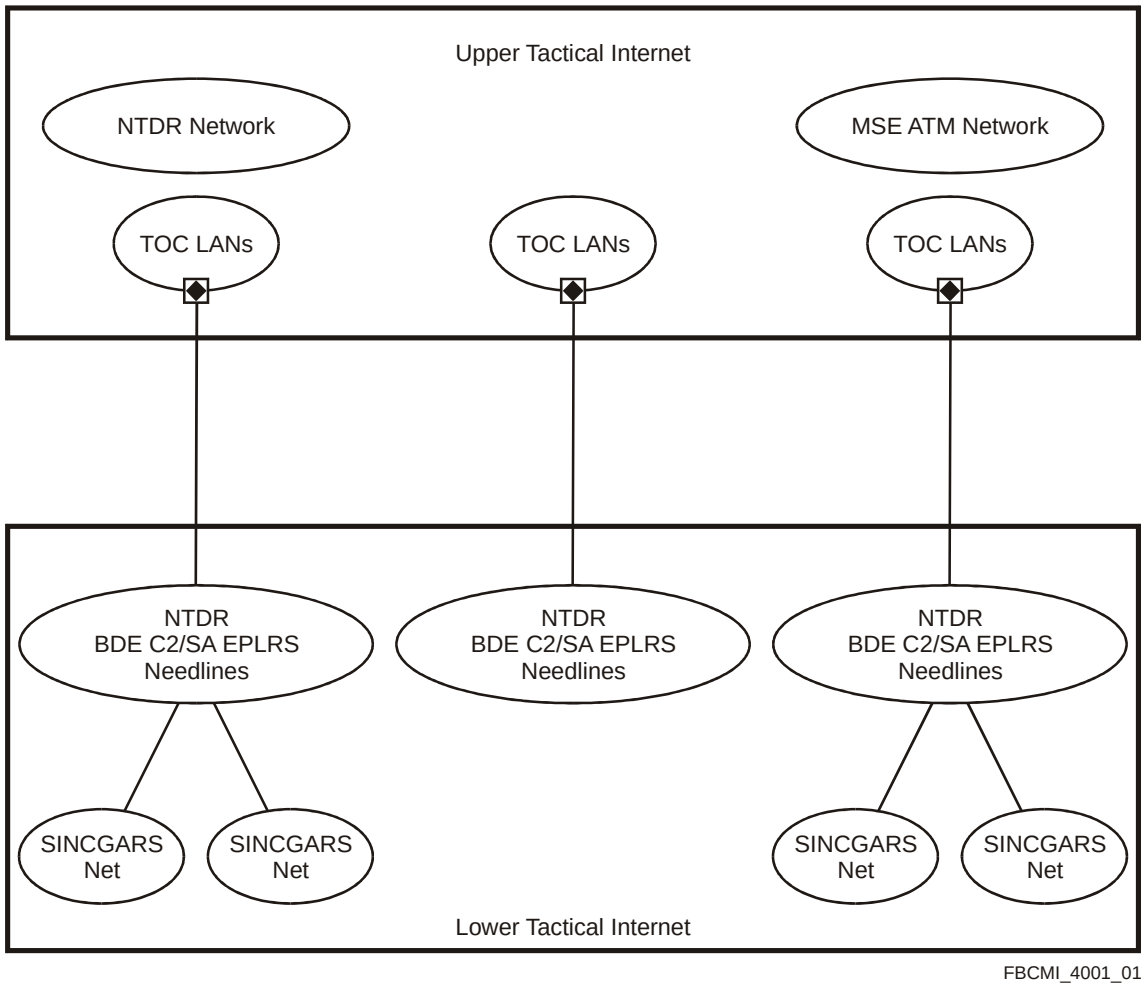

Figure 1–15. TI Upper/Lower Architecture

1–33 SA AND C2 DATA

The Tactical Internet is dynamic and will evolve with the phased development of the FBCB2 system. This section will define the hardware component parts as well as some of the software commands and routines used to provide Situational Awareness (SA) data and Command and Control (C2) information. SA includes friendly and unknown position reports. C2 includes alerts, warnings, and fire support information. Both C2 and SA data require the capability for timely and reliable exchange between a sender and recipient. Therefore, the TI must provide reliable message delivery despite mobility of units, battle stress, obscuring terrain, enemy interference, destruction of command posts loss of key elements and replacement of individual platforms or units. Since the TI is required to deliver messages reliably while incurring network losses due to battle damage, the loss of any one node will have no serious impact on the remaining network. Redundancy is provided to avoid single points of failure.

1–34 CONNECTIVITY

The TI provides the services to directly interconnect SA and C2 data among hosts within a Brigade (BDE) and to exchange SA and C2 data between and above BDEs. This data exchange is provided using broadcast, multicast and reliable unicast methods. Figure 1–16 shows the difference between multicast and unicast methods. The TI provides interfaces to all hosts with standard commercial Internet protocols. Some examples are: Point-to-Point Protocol (PPP) and Simple Network Management Protocol (SNMP).

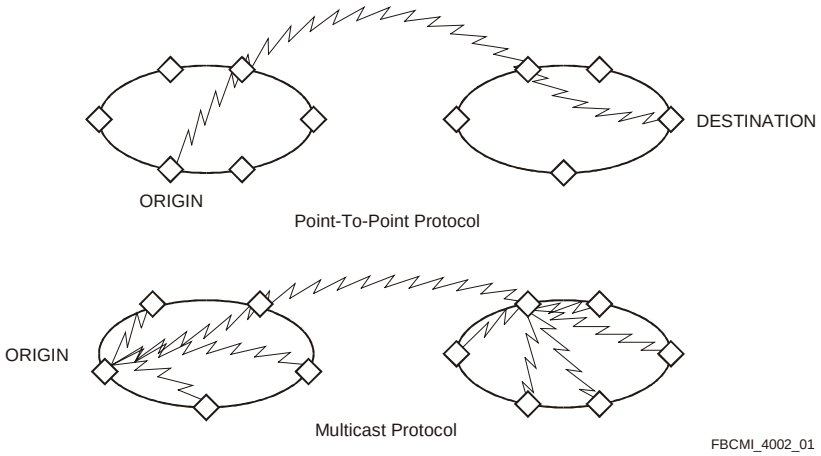

Figure 1–16. Data Exchange Methods

1–34.1 POINT-TO-POINT PROTOCOL (PPP)

PPP is a link layer protocol which is used to provide a standard mechanism for transporting IP datagrams over a point-to-point link. It uses High-level Data Link Control (HDLC)-like framing for encapsulation IP datagrams.

1–34.2 INTERNET PROTOCOL/INTERNET CONTROL MESSAGE PROTOCOL (IP/ICMP)

IP/ICMP are network layer protocols used for the routing and delivery of all message types through the TI. ICMP is a user of IP, providing feedback about problems in the communication environment.

1–34.3 SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)

SNMP is an application layer protocol used to manage nodes (e.g., routers) in a network. The INCs receive all necessary router initialization data or changes to router initialization data from their local host via their PPP interfaces using SNMP. The host also determines router and local radio interface status via SNMP.

1–34.4 ORGANIZATION SUPPORT

To maneuvering platforms, the TI provides dynamic selection of SA servers and election of C2 gateways. This approach ensures that data can flow among the hierarchical nets in the event of loss of connectivity or if a server or gateway platform becomes inoperable. This provides the capability for hosts to change SINCGARS nets and EPLRS needlines to alter their configuration via host-initiated commands to the INC. With some limitations, the host retains C2 and SA connectivity. In the event of a task organization change, the TI design requires minimal change to platform configuration, which facilitates establishing digital communications in the new organization. Generally, platforms equipped with only a single SINCGARS radio (e.g., a wingman (WM) in a platoon (PLT)) do not require a change in net identification (ID) as a result of Unit Task Reorganization (UTR). Platforms equipped with more than one SINCGARS (e.g., Platoon Leader (PL) or company First Sergeant (ISG) only change the net ID of the radio on the higher echelon voice net. This means the router requires no re-configuration to retain SA and C2 connectivity. Organizational changes within a battalion require only changes in multicast group affiliation, changes of organizational relationships, and changes in voice radio net ID. Organizational changes between battalions, but within a brigade, will require changing multicast group affiliation, organizational relationships, voice radio net ID, and two EPLRS needlines. Organizational changes between brigades and within the division will require changing multicast group affiliation, organizational relationships, voice radio net ID, and four EPLRS needlines. The stimulus for a task organization change is a message distributed to all affected platforms, the platform then processes the stimulus information and executes the necessary configuration changes.

1–34.5 SYSTEM FUNCTIONS

The primary connectivity provided is for SA and C2 data within the brigade. The sources for this data are within the brigade, from other brigades, and echelons above the brigade. Additional functions consisting of exchange of reachability information, selection of position servers, and election of C2 gateways, are provided and are transparent to hosts.

1–35 INTERNET CONTROLLER (INC) INTERFACE

The INC provides the FBCB2 interface to the platform radio suite as a data subscriber, intra-net relay, or Internet routing. The mechanical connection employs 3 wires (two signal wires and a ground wire.). The interface operates at a data rate of 38.4 kbps Two ports are for operations with SINCGARS ASIP radios. One port is for operation with an EPLRS radio, TOC router, or a second host computer. Interface is between the INC J6 connector and SIAD J1 connector using a W3N cable, and SIAD P1 connector and the Processor Unit J3 connector using a W3 cable.

1–36 SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM (SINCGARS) ADVANCED SYSTEM IMPROVEMENT PROGRAM (ASIP)

The SINCGARS ASIP is the Combat Net Radio (CNR) that supports both voice and data communications for Army war fighters in a tactical environment. Voice communications are valuable to check line-of-sight situations and evaluate antenna operation. The SINCGARS ASIP also receives and transmits digital data within lower level battalion stub-nets. Platforms that use SINCGARS ASIP rely on the PLGR for time and location data.

1–36.1 SINCGARS HARDWARE

The SINCGARS ASIP Ground Radio system for vehicular installations includes the RT-1523E Receiver-Transmitter (RT) and the AM-7239E Vehicular Amplifier Adapter (VAA). The SINCGARS ASIP provides regulated power, a radio control interface and provisions for incorporation of the Internet Controller (INC) to support TI operations.

1–36.2 SINCGARS SA AGENTS

SINCGARS SA agents are incorporated by the INC to provide efficient handling of SA data over SINCGARS nets. The agent takes messages from a host and transmits the data portion of the IP packet over the SINCGARS net using a link level broadcast. There are typically two agents configured per SINCGARS net: one generally used for upward dissemination of SA data and one generally used for downward dissemination of SA data. These two agents are accessed via unique UDP port numbers in the UDP/IP header.

1–37 ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS)

The EPLRS is a digital data radio system. Its primary components are the Network Control Station (NCS) and the EPLRS User Units (EPUUs). The NCS is the centralized control element used for system initialization, dynamic monitoring, and controlling the EPLRS network. The EPUU is the radio receiver-transmitter provided to the users. The FBCB2 system architecture utilizes EPLRS radios to provide Wide Area Network (WAN) connectivity from platoon level through brigade level. EPLRS utilizes the Army Data Distribution System Interface (ADDSI).

Each Radio Set (RS) can accept data from one computer (called a “host”) and send that data over the air to one or more other computers via their attached radio sets. Each RS in the network is assigned time for short transmissions (called timeslots) during which it can transmit while other members receive. The radio sets are networked together under the control of a mobile NCS to provide automatic, jam-resistant relaying of host-to-host data throughout the network. The NCS provides integrated position location and navigation services to the user as well as communications assignments and keys to the RSs.

1–37.1 EPLRS HARDWARE

The EPLRS consists of a Receiver/Transmitter (RT-1720B(C)/G or RT-1720C(C)G), input/output device (User Read Out (URO)), antenna (SV-RS), and a power source (vehicle).

1–37.2 EPLRS SA AGENTS

EPLRS SA agents are incorporated by the INC to provide efficient handling of SA data over the EPLRS needline. The agent takes messages from a host and based on the User Data Protocol (UDP) port number in the UDP/IP header, directs the data portion of the IP packet to a corresponding needline (by Logical Channel Number (LCN)). Likewise, it takes data from the EPLRS radio and based on the LCN, directs the data to the host with a UDP port number that corresponds to the LCN.

1–38 NEEDLINES

Each particular “need to communicate” between two or more hosts is called a “needline,” also known as a Logical Channel Number (LCN) or Permanent Virtual Circuit (PVC). There can be many needlines running on a radio set at one time, supporting the hosts’ data communications needs. Needlines can be activated manually via the URO or host, or automatically by the host. The RS will automatically activate the needline if any data is received on the corresponding LCN. If the RS is turned off or power is lost, active needlines will be automatically reactivated when the RS is powered back on.

1–39 TYPES OF NEEDLINES

Virtual circuits, called needlines, are established between radios based on host data requirements. Once enable, the needlines are automatically maintained by the radios without operator or NCS intervention. There are six major types of needlines, each falling into the two major types of host-to-host services (many-to-many and one-to-one).

1–39.1 POINT-TO-POINT (P-P) NEEDLINES

Provide unequal data transfer capability for two endpoints' hosts. Either endpoint can have all the data transfer capability, or it can be split between them in various ratios. Data is transferred at user data rates from 1200 bps each way to 56,000 bps all one way. Application of a P-P needline would be like talking to another person on a telephone.

1–39.2 SIMPLEX (ONE-WAY) NEEDLINES

Provide a single host with the capability to send data to many hosts. For simplex needlines, data is transferred at user data rates from 160 to 3840bps. Application of a simplex needline would be like using a bullhorn to talk to many people at the same time that cannot talk back.

1–39.3 CARRIER SENSE MULTIPLE ACCESS (CSMA) NEEDLINES

Provide many hosts the capability to send data to each other. For CSMA needlines, data is transferred at user data rates from 1200 to 56,000bps (for the whole needline). The RS ensures there are no other RSs using the CSMA needline (carrier sense) and then sends data from the host. When completed, another RS will ensure no other RSs are using the needline and then transmit, and so on. This protocol allows many endpoints' hosts (multiple access) to use the same CSMA needline to send data to one or more endpoints' hosts. Application of a CSMA needline would be like a group of people on a contention voice net, each speaking when they have something to say and no one else is speaking.

1–39.4 MULTI SOURCE GROUP (MSG) NEEDLINES

Provide up to 16 hosts the capability to send data to many hosts. MSG needlines provide each source host guaranteed bandwidth without conflict, with user data rates from 150 bps to 56,000 bps. Data transferred from one source also goes to the other sources. If fewer sources are used, the sources can have more than $1/16^{th}$ of the data transfer capability. Each $1/16^{th}$ is called a share. For example, a source endpoint can be assigned to have $4/16^{ths}$ of the total MSG data transfer capability, with 12 other source endpoints each having $1/16^{th}$ of the total MSG data transfer capability. If there are unused shares, an RS whose host load is larger than its assignment on the MSG needline will use these available shares. The more shares an RS had, the more data transfer capability it has. The RS also supports eight- and four-share MSG needlines that provide faster speed of service. Application of an MSG needline would be like 16 people with bullhorns talking, in a round robin fashion, to many people who cannot talk back. An MSG needline is similar to a CSMA needline, but each sender has a dedicated guaranteed amount of time to talk (similar to many concurrent simplex needlines).

1–39.5 DUPLEX (TWO-WAY) NEEDLINES

Provide radio-acknowledged, higher reliability, balanced data transfer between two hosts with data rates from 20 bps to 1920 bps each way. They provide equal data in both directions. This data transfer capability may be used by either or both endpoints. The endpoint RSs will automatically ensure that the data is all delivered using RS-to-RS acknowledgement protocols. This needline type required pre-planning in the NCS by SYSCON for the RS to be able to use. Application of duplex needline would be like talking to another person on a telephone.

1–39.6 DYNAMICALLY ALLOCATED PVC (DAP) NEEDLINES

DAP needlines are a special type of duplex needline. They have capabilities similar to those of duplex needlines (rates are 60 bps to 1920 bps), but DAP needlines are automatically set up and detected on demand by the host, without any preplanning or NCS involvement. However, if the network resources are not available to support the data rate requested by the host, the needline rate is reduced to the highest rate available that the RS can support.

1–39.7 HIGH DATA RATE (HDR) DUPLEX NEEDLINES

Have the same features as duplex needlines except that data rates are higher from 1200 bps to 28,500 bps each way. Application of a HDR duplex needline would be like talking to another person on a telephone.

1–40 NETWORK CONTROL STATION (NCS) FUNCTIONS

The NCS provides the RSs with keys for advance and needline parameters and responds to requests for position, location, and limited navigation. In order to provide these services, each RS must be in a network controlled by a NCS. If an RS cannot be in such a network, the RS enters a Track network, if possible.

Needline Parameters – When the RS receives a request to activate a needline that has not been activated before; the RS forwards that request to the NCS. The NCS then sends the needline parameters to the RS.

1–41 NEAR TERM DIGITAL RADIO (NTDR)

The NTDR (RT-1812(C)/U) supports the routing of data within the network. Transmitted data is encrypted, protected with forward error correction and detection codes, and then modulated onto an RF carrier. Received data is recovered following the same processes in reverse. The NTDR operates in a frequency band of 225 to 450 MHz in discrete tuning steps of 0.625 MHz.

1–42 NETWORK CHECKING

The Operators Manual, TM 11-7010-326-10 contains all the instructions for checking the local communications equipment. The Systems Tab allows checking of the GPS (PLGR), Local Area Network (LAN), router, and radios (both SINCGARS and EPLRS). There is an SA Tab for checking the current SA server, your net data, and status of the CSMA assigned at Battalion or Brigade level.

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CHAPTER 2

UNIT MAINTENANCE INSTRUCTIONS

TABLE OF CONTENTS

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SECTION I. REPAIR PARTS, TOOLS, SPECIAL TOOLS, TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE)

2–1 REPAIR PARTS

A listing of repair parts is located in each applicable appendix and Technical Bulletin (TB) for the platform in need of repair.

2–2 TOOLS

The applicable tools with the National Stock Number (NSN) for unit level repair are located in the following:

Tool Kit Description	NSN
Electronic Equipment, TK-101/G	5180-00-064-5178

2–3 TMDE

TMDE Description	NSN
Multimeter AN/PSM-45A (DVM)	6625-01-265-6000
McMaster Carr Multipurpose wire stripper/crimper, P/N 7007K92 (For making ground straps).	

SECTION II. SERVICE UPON RECEIPT

2–4 PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT

a. Check the packing list for correct part numbers and complete shipment or replacement parts when piece parts are involved. Inspect for the following:

   (1) Whenever possible, remove packing just prior to installation. Do not remove packing ahead of time.

   (2) Check cables and connectors for any obvious damage that may have occurred during shipping.

b. When the part received is a replacement, the failed part should be placed in the shipping container(s) left by the new part. Refer to Section VII, Preparation for Storage or Shipment, in this manual for additional instructions.

SECTION III. EQUIPMENT CHECK PROCEDURES

2–5 COMMON CHECK PROCEDURE

When a problem is suspected:

a. Try to duplicate the problem reported by the operator.

b. Inspect defective unit and associated cables for obvious damage.

c. Isolate the problem to a failed LRU. If the problem is not obvious, follow the troubleshooting instructions of the tables in Section IV.

2–6 SPECIFIC PLATFORM CHECK PROCEDURES

Platform-check procedures are general in nature. The procedures apply to all platforms. An excellent indication of proper operation is the Power-On Self-Test (POST). If no problems are indicated after initial self-test, refer to the operator's initial complaint. If the original complaint is resolved, the unit is operational. Specific testing procedures are described in detail by the Operator's Manual.

2–7 PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

NOTE

All PMCS for this system is done at the operator level in accordance with the instructions in the FBCB2 Operator's Manual, TM 11-7010-326-10, or Pocket Guide, TB 11-7010-326-10. The maintainer has no periodic tasks to perform. Touchscreen Calibration should be performed only when required.

2–7.1 TOUCHSCREEN CALIBRATION (INTERNAL PROGRAM)

Touchscreen calibration is required when the Display Unit (DU), Processor Unit (PU), and/or Removable Hard Disk Drive Cartridge (RHDDC) is replaced. Touch screen calibration may be required after long periods of operation in the field. Perform AN/UYK-128(V) startup and login procedures before attempting calibration. Refer to Table 2–1 for touchscreen calibration procedure.

Table 2–1. Touchscreen Calibration

STEP	OPERATOR ACTION	INDICATION OR CONDITION
1	Select the **Start** button.	The **Start** option menu is displayed.
2	Select the **Settings** option.	The **Settings** option menu is displayed.
3	Select the **Touchscreen** option.	The calibration touchscreen is displayed with a target bulls eye at the lower left corner.
4	Select center of target bull's eye with the stylus.	The calibration touchscreen is displayed with a target bulls eye at the upper right corner.
5	Select center of target bull's eye with the stylus.	The calibration touchscreen is displayed with a target bulls eye at the lower right corner.
6	Select center of target bull's eye with the stylus.	The calibration touchscreen closes. The **osc-touch-calibration.ksh** dialog box is displayed.
7	Type the letter "Y".	The letter "y" is displayed at the prompt.
8	Select the "Enter" key.	The **osc_touch_calibrate.ksh** dialog box. Closes.

2–7.2 FUNCTIONAL CHECK

Functional Check may be performed whenever operation must be verified as the last step of troubleshooting, removal/replacement, or after periods of non-use.

a. Power up and initialize all interface equipment.

b. Set PU circuit breaker/switch to the ON position.

c. Power up AN/UYK-128(V) computer by pressing PWR button on display for up to 4 seconds, then release.

NOTE

Observe that the Display Unit PWR, DISP and CPU green LED lights are lit.

d. Observe that the PLGR synchronizes with PU, indicated by the PLGR dialog box showing green.

e. Observe that the Router synchronizes with the PU, indicated by the Router dialog box showing green.

f. At the Session Manager screen, select OPS button to display the OPS screen.

g. Verify the GPS status is either green or amber on the Classification/Status Bar.

h. Verify the Communications status is either green or amber on the Classification/Status Bar.

NOTE

Check that PLGR and COM (Communications) are either green or amber. This process could take up to 20 minutes for usable PLGR Time Figure Of Merit (TFOM).

SECTION IV. TROUBLESHOOTING

2–8 COMMON PLATFORM TROUBLESHOOTING PROCEDURES

2–8.1 DISPLAY UNIT BIT DIAGNOSTICS

The AN/UYK-128(V) computer has Built-In-Test (BIT). The main window to this testing is the DU lights. Interpretation of these lights is important. The following is an explanation of the display diagnostics and what they mean to the maintainer. Refer to Table 2–2 through Table 2–4.

NOTE

In normal operation, only one LED in each group of three will be lit or blinking.

Table 2–2. Display Unit Power (PWR) LEDs

LED	CONDITION
Green	Power on, no problems detected.
Blinking Green	Heater on (but there is no power supply heater).
Amber	Power supply output voltage out of acceptable range
Blinking Amber	Undefined
Red	Loss of vehicle power, running on internal battery. Display will operate at reduced brightness.
Blinking Red	Input power out of acceptable range.

Table 2–3. Display Unit (DISP) LEDs

LED	CONDITION
Green	Display Unit OK
Blinking Green	Undefined
Amber	Degraded operation
Blinking Amber	Communications error (problem at the display unit)
Red	Display Unit shutdown or failure
Blinking Red	Undefined

Table 2–4. Processor Unit (CPU) LEDs

LED	CONDITION
Green	Processor Unit OK
Blinking Green	Internal heater on.
Amber	Degraded Processor Unit operation – Temperature Warning
Blinking Amber	Communication error (No message from Processor Unit)
Red	Processor Unit shutdown or failure.
Blinking Red	Power-On-Self-Test (POST) problem.

2–8.1.1 DIAGNOSTICS DISPLAY PRIORITIES

Multiple conditions may exist in the display simultaneously. For instance, there may be a BIT failure (blinking red) when heaters are on (blinking green). Heater display will take priority over the BIT display. The LED displays are prioritized. Refer to Table 2–5 for DU LED BIT priority listing.

Table 2–5. DU LED BIT Priority

LED	CONDITION
Red	Back light shutdown
Amber	Reduced back light
Blinking Green	Heater on
Blinking Amber	Communication error
Blinking Red	BIT failure
Green	Normal operation

2–8.1.2 BIT DISPLAY FOR DU NSN 7025-01-475-0229 AND DU NSN 7025-01-475-0282

If the DU controls and indicator panel DISP Red LED or Yellow LED is blinking, a BIT diagnostic display pattern can be shown on the LEDs. To initiate the BIT diagnostic display, press both the BRT+ and BRT- for 2 seconds. For 6 seconds, the 9 LEDs will show a pattern indicating all the BIT errors detected. Refer to Table 2–6 for DU BIT diagnostic display.

NOTE

If the +12V is missing, both the Fan error and Heater error LED will light.

Table 2–6. BIT Diagnostic Display

COMPONENT	COLOR	CONDITION
Power	Red	Fan error.
	Yel	Heater error.
	Grn	Sensor error.
Display	Red	No Hsync detected (no video).
	Yel	Stuck key.
	Grn	EEPROM write error.
Processor	Red	Serial buffer overflow.
	Yel	Serial port framing error.
	Grn	Undefined. Always off.

2–8.2 POWER-ON-SELF-TEST (POST) LED CHECK FOR PU NSN 7021-01-475-0217/ NSN 7021-487-0579

After startup, observe the POST LED illuminates **GREEN**.

a. Open the Access Door of the PU as shown in Figure 2-1.

b. Note that the LED is GREEN, which indicates that the PU passed the POST.

c. If the LED is not illuminated then, proceed to paragraph 2–8.4.

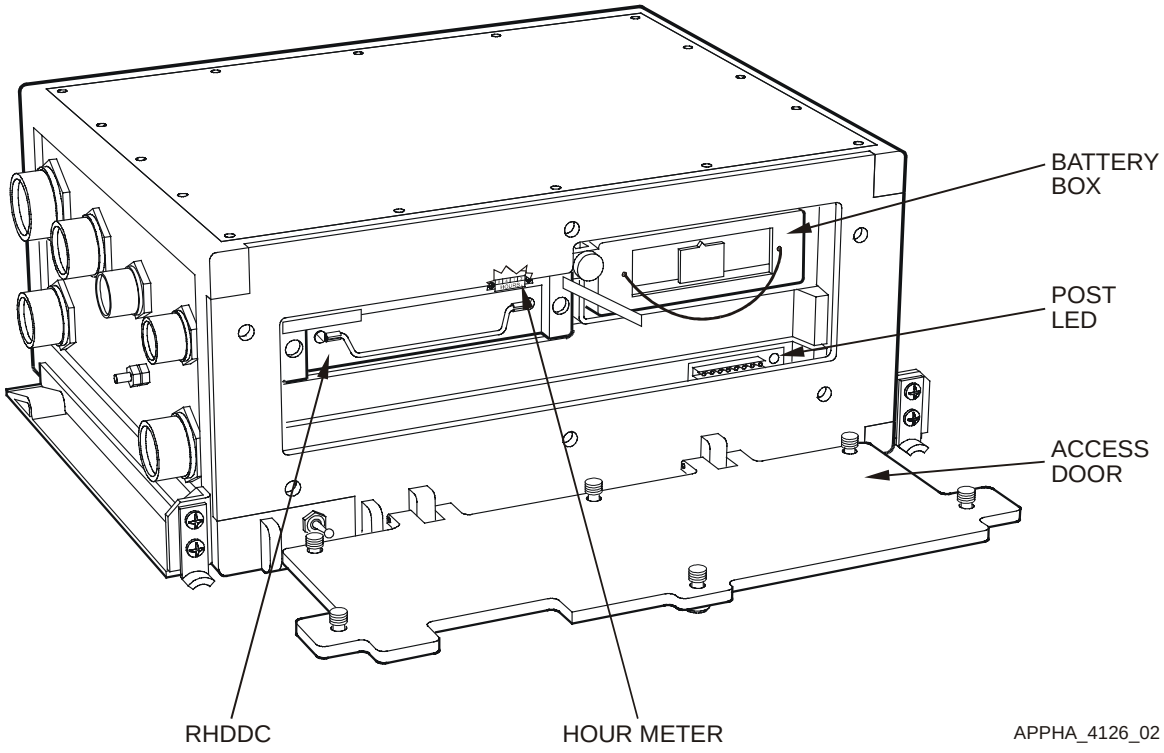


Figure 2-1. Processor Unit POST LED Indicator

2–8.2.1 HOUR METER FOR PU NSN 7021-01-475-0217/NSN 7021-01-487-0579

The hour meter displays the accumulated system hours when the system is powered on. The hours meter is located under the RHDDC retaining latch.

2–8.3 PROCESSOR UNIT DIAGNOSTICS FOR PU NSN 7021-01-474-3793/NSN 7021-01-487-0578

In this PU, the hours and display diagnostics (See Figure 2-2) are located on the battery tray behind the access door. This device serves as an Hour Meter and as a Diagnostic Indicator. The 9V non-rechargeable battery in the battery assembly powers the Liquid Crystal Display (LCD). If the LCD becomes hard to read or disappears completely, the 9V battery may require replacement.

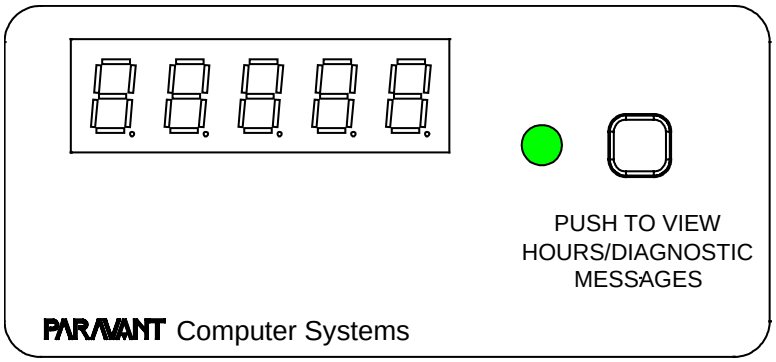


Figure 2-2. Hours and Diagnostics Indicator

2–8.3.1 HOURS METER MODE FOR PU NSN 7021-01-474-3793/NSN 7021-01-487-0578

Press the push button once to read the system hours. The hour meter only displays the accumulated system hours when the system is in the power on or off state. The display goes blank in 2 seconds.

NOTE

The intensity of the display is slightly lower when the system is off.

2–8.3.2 DIAGNOSTIC INDICATOR MODE FOR PU NSN 7021-01-474-3793/NSN 7021-01-487-0578

This mode is only available after powering on the system. Press the button once to display the system hours, press it again before the display timeout to view the diagnostic code (dC), press the button again to view the BIOS Power-On Self Test (POST) code. The display goes blank in 2 seconds and defaults to display the system hours when the button is pressed. The dC code 00 indicates normal operation. A diagnostic code 07 indicates a POST failure, and the Fault at POST (FP) code displays the active POST Code error. The FP code 00 indicates normal operation. The illuminated green LED indicates normal operation.

Figure 2-3 illustrates the label located inside the Processor Unit's removable hard drive access door which describe the diagnostic codes. Refer to Table 2–7 for an explanation of the diagnostic codes.

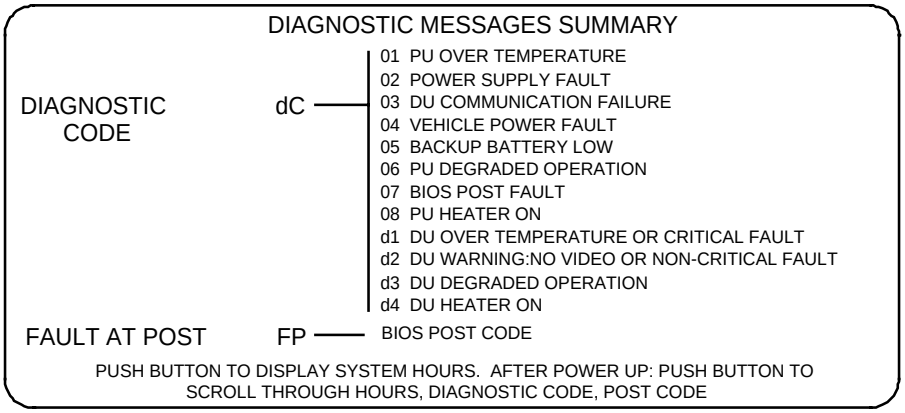


Figure 2-3. Diagnostic Code Label

2–8.3.3 DIAGNOSTIC MESSAGE FOR PU NSN 7021-01-474-3793/NSN 7021-01-487-0578

Table 2–7. Diagnostic Codes

CODE NO.	FAULT/INDICATION	CONDITION
01	PU Over Temperature	Indicates the PU is shutdown due to internal overheating.
02	Power Supply Fault	Indicates that one of the internal CPU voltages (3.3, 5, 12) is out of range.
03	DU Communication Failure	Indicates the PU has not received a response from the DU.
04	Vehicle Power Fault	Indicates the external power voltage is out of range.
05	Backup Battery Low	Indicates the battery voltage reading is low.
06	PU Degraded Operation	Indicates that the CPU has engaged the Clock throttling mode; correlates to the indicator in the DU “CPU solid amber.”
07	BIOS POST fault	Indicates that the CPU BIOS Power-On Self Test did not complete successfully.
08	PU Heater On	Indicates that during a cold boot at a low temperature the PU has enabled the self - heating cycle before booting up the computer.
d1	DU Over Temperature or Critical Fault	Indicates that DU has shutdown.
d2	DU Warning: No Video or Non-Critical Fault	Indicates the DU has sent a warning message to the PU due to not detecting video or a non-critical internal DU fault.
d3	DU Degraded Operation	Indicates that the DU has decreased the brightness intensity.
d4	DU Heater On	Indicates that the DU has enabled a self - heating cycle when operating at a low temperature.

2–8.4 TROUBLESHOOTING INDEX

The purpose of the troubleshooting index is to provide a listing of equipment faults and/or indications and reference the appropriate table to perform the necessary troubleshooting procedures. This troubleshooting index is arranged by equipment nomenclature and/or function. Observe the indication or symptom then locate the fault/system in the fault indication column of the troubleshooting index (Table 2–8). Perform the troubleshooting as outlined in the referenced procedure under the corrective action column.

Table 2–8. Troubleshooting Index

EQUIPMENT AND/OR FUNCTION	FAULT INDICATION	CORRECTIVE ACTION
AN/UYK-128 loss of Power.	System begins to power up and then shuts down.	Refer to Table 2–9, No. 3.
	No LEDs illuminated on DU controls and indicators panel.	Refer to Table 2–9, No. 2.
PU	Circuit breaker/switch will not stay set to ON.	Refer to Table 2–9, No. 1.
	PU does not switch to battery holdup with loss of power.	Refer to Table 2–13, No. 3.
	FBCB2 software locks up or responds slow.	Refer to Table 2–13, No. 5.
DU screen messages (during bootup).	Display message: "**DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER**".	Refer to Table 2–10, No. 1 step d.
	Display message: "**NO OPERATING SYSTEM FOUND**".	Refer to Table 2–10, No. 1 step d.
	Display message: "**DRIVE NOT RESPONDING"**.	Refer to Table 2–10, No. 1.
	PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 display message: "**Non-System disk or disk error - replace and press any key."**	Refer to Table 2–10, No. 1 step b.
	PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 system stops at diagnostic screen.	Refer to Table 2–10, No. 1 step a.
	PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 ram count displayed during boot-up.	Refer to Table 2–10, No. 2 step b.

Table 2–8. Troubleshooting Index (Continued)

EQUIPMENT AND/OR FUNCTION	FAULT INDICATION	CORRECTIVE ACTION
DU screen messages (during bootup). (Cont.)	PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 ram count displayed during boot-up.	Refer to Table 2–10, No. 2 step d.
	Display message: "**INIT: Command is spawning too rapidly. Check for possible errors.**"	Refer to Table 2–10, No. 3.
	System locks up after blue license screen.	Refer to Table 2–10, No. 5.
	System locks up or continually reboots.	Refer to Table 2–10, No 6.
	PU NSN 7021-475-0217/ NSN 7021-01-487-0579 boots to blue license screen and stops.	Refer to Table 2–10, No. 4.
DU **PWR** LED indicators.	Red LED is illuminated.	Refer to Table 2–13, No. 2.
	Amber LED is illuminated.	Refer to Table 2–13, No. 6.
	Red blinking LED is illuminated.	Refer to Table 2–9, No. 4.
DU **DISP** LED indicators.	Red LED is illuminated.	Refer to Table 2–14, No. 2
	Amber LED is illuminated.	Refer to Table 2–14, No. 1.
DU **CPU** LED indicators.	Solid or blinking amber.	Refer to Table 2–13, No. 1.
	Solid or blinking red.	Refer to Table 2–13, No. 7.
DU **PWR, DISP,** or **CPU**.	LED not illuminating. DU screen is functioning.	Refer to Table 2–14, No. 10.
DU screen.	No illumination on DU screen (black screen).	Refer to Table 2–14, No. 3.
	DU screen is dim (hard to read).	Refer to Table 2–14, No. 4.
	DU screen illuminated, nothing is displayed (white screen).	Refer to Table 2–14, No. 5.
	DU screen is illuminated, and data is distorted or no data and streaks across screen.	Refer to Table 2–14, No. 6.
	Display Unit touchscreen does not respond to touch or responds improperly.	Refer to Table 2–14, No. 7

Table 2–8. Troubleshooting Index (Continued)

EQUIPMENT AND/OR FUNCTION	FAULT INDICATION	CORRECTIVE ACTION
DU Ops screen.	GPS status indicator R (red).	Refer to Table 2–11.
	Status (F5) GPS folder has at least one of three status checks showing Go.	Refer to Table 2–11, step c.
	Status (F5) GPS folder has all status checks showing No Go.	Refer to Table 2–11, step d.
	Communications status indicator A (amber), R (red), or G (green). Message data not transmitted or received. Icons are stale or has self icon only.	Refer to Table 2–12, No. 1 step a.
	Status (F5) Router folder indicates PPP status No Go.	Refer to Table 2–12, No. 1 step c.
	Status (F5) SINCGARS folder indicates status Degraded.	Refer to Table 2–12, No. 2
	Status (F5) SINCGARS Interface status indicates No Go.	Refer to Table 2–12, No. 3 step b.
	Status (F5) SINCGARS ID/Frequency status indicates No Go.	Refer to Table 2–12, No. 3 step c.
	Status (F5) SINCGARS Packet status indicates No Go.	Refer to Table 2–12, No. 3 step d.
	Status (F5) EPLRS status indicates No Go.	Refer to Table 2–12, No. 4
Battery Box PU NSN 7021-01-475-0217/ NSN 7021-01-487-0579.	Battery Box has less than 3 or no LCD bars shown.	Refer to Table 2–13, No. 3 step a.
Battery Tray PU NSN 7021-01-474-3793/ NSN 7021-01-487-0578.	Battery Tray diagnostic code 05.	Refer to Table 2–13, No. 3 step b.
	Battery Tray does not display diagnostic codes when button pressed.	Refer to Table 2–13, No. 4.
KU	Keyboard Unit/Mouse does not work.	Refer to Table 2–15, No. 1.
	Single or multiple keys do not operate.	Refer to Table 2–15, No. 2.
	Keyboard back lighting does not light.	Refer to Table 2–15, No. 3.

2–8.5 TROUBLESHOOTING

Troubleshooting is presented in tabular form to aid the maintainer in fault isolation. Be sure to follow all WARNINGS and CAUTIONS presented for these tasks. Table 2- 9 through Table 2-14 column headings are as follows:

No. Column. This column is utilized for sequential step numbers.

Symptom. This describes the problems reported by the operator. In some tables there are variations of the same problem to help the maintainer troubleshoot a variety of conditions.

Test or Inspection. This describes the methods used in the analysis of the problem. These are tests or inspections used to determine which LRU may be at fault.

Corrective Action. This informs the maintainer what action should be taken to resolve the problem or progress to the next step. Use functional checkout (paragraph 2.7.2) to verify that problem has been resolved.

Following is a listing of tables used to aid in troubleshooting that deal with a specific problem:

Table 2–9. Loss of Power Troubleshooting.

Table 2–10. Boot-Up Troubleshooting.

Table 2–11. Loss of Time/Location Troubleshooting

Table 2–12. Loss of Connectivity Troubleshooting.

Table 2–13. Processor Unit Troubleshooting.

Table 2–14. Display Unit Troubleshooting

Table 2–15. Keyboard Unit Troubleshooting

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128 computer and PLGR. Failure to comply will result in equipment damage.

NOTE

If the internal battery has been run-down, AN/UYK-128(V) computer will not remain on when power is interrupted. When the external power problem has been resolved, AN/UYK-128(V) computer must be operated for eight (or more) hours to recharge the internal battery.

NOTE

Use Multimeter AN/PSM-45A (or equivalent) to measure voltages. When troubleshooting AN/UYK-128(V) computer, if a cable problem is suspected, refer to the cable data (Appendix E, Table E-1) for the specific platform you are working on. The illustrations at the end of Appendix E, contain all the cable information required for troubleshooting. The quickest way to resolve a cable problem is replacement. If a replacement is not available, use Table E-1 to locate the wiring diagram, use the multimeter to check the cable for continuity, and verify there are no shorts between wires and/or shielding. Any opens or shorts will require cable replacement.

Table 2–9. Loss of Power Troubleshooting

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
1	AN/UYK-128(V) computer circuit breaker/switch trips (will not stay set to on.)	a. Verify that power cable W1 is properly connected. b. Verify that W2 cable between DU and PU is properly connected. c. Has the PU circuit breaker opened?	a. Secure loose or unconnected W1 power cable. b. Secure loose or unconnected W2 cable. c. Reset PU circuit breaker/switch. (Set to OFF, then back to ON.) If circuit breaker fails to set, replace PU.
2	AN/UYK-128(V) computer does not turn on. (LED PWR indicators are not illuminated.)	a. Verify W1 and W2 cables are properly connected. b. Is the vehicle power source activated? Examples: b.1 M1068/M934/M1097/ M113 –SINCGARS ASIP R/T display is illuminated. b.2 Tracked Vehicles –With VRC 1780 communication box, main power switch must be set to ON. b.3 Paladin/Master Power switch set to ON. c. Does vehicle have power? Start vehicle. d. Disconnect power cable from J1 of the PU. e. Use the AN/PSM-45A (DVM) to check for +28VDC at the pins of power cable connecting to J1 of PU. **Pins Voltage** A, B, & C +28V D, E, & F RET f. Reconnect power cable to J1 of the PU.	a. Secure loose or unconnected cables. b. Switch on all applicable controls. c. If vehicle will not start, contact vehicle maintenance. d. None e.1 If +28V is not present at power cable connection to PU J1, check for +28V at the source (vehicle connection). If +28V is present at the power source, replace power cable. If +28V is not present, call for vehicle maintenance. e.2 If +28V is present the cable may be checked as follows: disconnect cable W2, use the AN/PSM-45A (DVM) to check continuity between pin 19 of W2-P1 and pin 19 of W2-P2. If there is no continuity, replace W2. f. None

Table 2–9. Loss of Power Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
2 (Cont.)	AN/UYK-128(V) computer does not turn on. (LED PWR indicators are not illuminated.) (Continued)	g. Disconnect W2-P1 from J4 of the PU. h. Disconnect the W2-P2 connector from J1 of the display. i. Check W2 cable for damage. Check W2 cable continuity per cable wiring diagram.	g. None h. None i.1 If W2 cable does not pass continuity check, replace cable. i.2 W2 cable OK, replace DU. i.3 DU OK, replace PU.
3	AN/UYK-128(V) begins power up and then shuts down. (DU PWR LED lights momentarily.)	Reboot system to verify fault. Check vehicle power.	Vehicle power is below 18 VDC, call vehicle maintenance. If vehicle power is OK, replace PU.
4	PWR LED red light is blinking.	Reboot system to verify fault.	Check vehicle power to ensure it is not below 18VDC. IF vehicle power is OK, replace PU.

NOTE

Continuous re-booting or slow response is an indication that the operator may not have cleared “Logs” and “Queues”.

Table 2–10. Boot-Up Troubleshooting

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
1	a. PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 boots to diagnostic screen.	a. Verify RHDDC is present.	a. If RHDDC is present, power down system and reseat RHDDC. Restore power and check operation. Problem solved. If not, continue with No. 2 step c. If missing, continue with c.
	b. PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 Display message: **Non-System disk or disk error – replace and press any key**.	b. Verify RHDDC is present.	b. If RHDDC is present, power down system and reseat RHDDC. Restore power and check operation. Problem solved. If not continue with No. 2 step a. If RHDDC is missing, continue with c.
	c. AN/UYK-128(V) computer DU displays: **Operating system not found**.	c. None	c.1 Power down PU and install RHDDC. Restore power and check operation. Problem solved. If not, continue with c.2. c.2 Replace RHDDC. Problem solved. If not, replace PU.

Table 2–10. Boot-Up Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
1 (Cont.)	d. Display message: **DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER** or **NO OPERATING SYSTEM FOUND**, or **DRIVE NOT RESPONDING**.	d. Perform system shut-down IAW TM 11-7010-326-10 or TB 11-7010-326-10. e. None	d. After shut-down, and 10 second spin down, reseat RHDDC, restore power and check operation. Problem resolved. If not, continue with e. e. Replace RHDDC. Problem resolved. If not replace PU.
2	a. PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 screen message, **Non-System disk or disk error - replace and press any key."**	a. None	a. Refer to BIOS repairs for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 (repair paragraph 2-14.2).
	b. PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 ram count displayed and boot-up process stops.	b. None	b. Refer to BIOS repairs for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 (repair paragraph 2-14.1).
	c. PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 boots to diagnostic screen and stops.	c. None	c. Refer to BIOS repairs for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 (repair paragraph 2-15.1).
	d. PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 ram count displayed and boot-up process stops.	d. None	d. Refer to BIOS repairs for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 (repair paragraph 2-15.2).
3	The AN/UYK-128(V) DU screen displays the following message: **INIT: Command is respawning too rapidly. Check for possible errors.**	DU screen displays the following message:	a. Press DU PWR button for up to 4 seconds until the PWR green LED goes dark to shut down the AN/UYK-128(V) computer. b. Verify the Keyboard cable is connected. If not connected, reconnect. Power up AN/UYK-128(V) computer. Problem solved. If not, replace KU.

Table 2–10. Boot-Up Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
4	System boots to blue license screen and stops.	Try rebooting the AN/UYK-128(V) computer.	a. The AN/UYK-128(V) computer functions correctly – problem is resolved. b. The AN/UYK-128(V) computer still does not function properly – replace PU. c. Repeat power-up procedure. Computer functions correctly – problem solved. If not then power-down computer and change cable W2. d. Repeat power-up procedure. Computer functions correctly – problem solved. If not then power-down computer and change DU.
5	AN/UYK-128(V) System locks up after blue license screen, Display blank.	Try rebooting the AN/UYK-128(V) computer.	a. Rebooting solves problem. b. Problem not solved. Shut down AN/UYK-128(V) computer. Reseat KU cable. c. Repeat power-up procedure. Computer functions correctly – problem solved. If not then verify BIOS IAW paragraph 2-14 or 2-15. Problem solved. If not continue. d. Shut down AN/UYK-128(V) computer. Replace KU and reboot. Problem solved – if not continue. e. Shut down AN/UYK-128(V) computer. Remove and replace RHDDC.
6	The AN/UYK-128(V) PU FBCB2 software locks-up or continually reboots.	a. Try rebooting the AN/UYK-128(V) computer. b. Press DU PWR button for up to 4 seconds until the PWR green LED goes dark to shut down the AN/UYK-128(V) computer.	a. System now operates properly, problem solved. If not, continue with step b. b.1 Open PU access door and verify RHDDC is properly seated. If not, reseat. If properly seated, replace RHDDC. b.2 Repeat power-up procedure. AN/UYK-128(V) computer functions correctly – problem solved. If not, continue with step c.

Table 2–10. Boot-Up Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
6 (Cont.)	The AN/UYK-128(V) PU FBCB2 software locks-up or continually reboots. (Continued)	c. Check KU cable.	c.1 If KU cable not connected, power down the AN/UYK-128(V) computer. Reconnect KU cable and continue. If connected, replace KU. c.2 Repeat power-up procedure. The AN/UYK-128(V) computer functions correctly – problem is resolved. If not, continue with step d.
		d. Power down the AN/UYK-128(V) computer.	d.1 Replace PU. d.2 Repeat power-up procedure. Computer functions correctly – problem solved. If not, continue with step e.
		e. Power down the AN/UYK-128(V) computer.	e.1 Replace W2. e.2 Repeat power-up procedure. Computer functions correctly – problem solved. If not, then continue with step f.
		f. Power down the AN/UYK-128(V) computer.	f. Replace DU.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128 computer and PLGR. Failure to comply will result in equipment damage.

NOTE

Before proceeding with the steps below, check to ensure that nothing is blocking the PLGR antenna. The PLGR relies on line-of-sight operation. Buildings, trees, camouflaging, or any elevated terrain, will require vehicle relocation.

Table 2–11. Loss of Time/Location Troubleshooting

SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
Display Unit indicates loss of time/location (GPS Status indicator is red).	a. Reboot AN/UYK-128 computer.	a. GPS Status indicator in Ops screen is green. Problem solved. If not, continue.
	b. Select Status (F5) button in OPS screen.	b. Open GPS folder and check Time, Position, and Heading status. If any one of the three are Go, proceed to step c.
	c Check PLGR setup as follows: 1) Almanac age of at least 3 days. 2) TFOM of 5 or less. 3) FOM of 4 or less. 4) Setup Mode: cont. 5) SV-Type: all-Y. 6) Setup units: L/L dms.	c.1 Setup incorrect, apply settings. Problem solved. If not, proceed to step d. c.2 Setup correct, proceed to step e.
	d. Shut down AN/UYK-128 computer and PLGR IAW Pocket Guide TB 11-7010-326-10.	d.1 Remove all connections to PLGR. Install PLGR BA-5800/U Lithium power battery. Re-initialize PLGR to work from internal power. Move PLGR to an outside location and allow it time to track satellites. Tracking time is 6 to 30 min. PLGR is operational. Proceed to step g. If not operational, replace PLGR.

Table 2–11. Loss of Time/Location Troubleshooting (Continued)

SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
Display Unit indicates loss of time/location (PLGR Status indicator is red). (Continued.)	d. Continued	**WARNING** PLGR battery may leak or explode if left inside PLGR while PLGR is connected to external power. Ensure PLGR battery is removed from PLGR prior to connecting PLGR to external power. Failure to comply may result in injury to personnel or damage to equipment. **NOTE** Ensure AN/UYK-128(V) and PLGR power is turned off before connecting cables. d.2 Remove BA-5800/U battery. Proceed to step e.
	NOTE Check to ensure PLGR I/O is set to Standard before performing serial port test step e.	
	e. Install loop-back test connector on PLGR J2 connector. Activate PLGR.	e.1 At the end of PLGR startup self-test, ensure all PLGR settings are correct as follows: **NOTE** If not correct, apply correct settings. 1) SETUP MODE: CONT 2) SV-TYPE: ALL-Y 3) SETUP UNITS L/L-dms e.2 Press MENU button until you see STATUS blinking in upper left corner of screen. Press down arrow 3 times until SERIAL is displayed in lower half of screen. Across from SERIAL should read active. If unit reads none, ensure loop back test connector is properly seated. If not, turn off PLGR, reseat and turn PLGR ON. PLGR reads active, continue with step f. If PLGR reads none, replace PLGR.

Table 2–11. Loss of Time/Location Troubleshooting (Continued)

SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
Display Unit indicates loss of time/location (PLGR Status indicator is red) (Continued)	f. With the PLGR still ON remove the Loop-Back test connector. The SERIAL should go from active to none. **NOTE** If PLGR I/O mode was changed to perform test, reset to original setting.	f. PLGR is operational, continue with step h. If not, replace PLGR. Problem solved.
	g. Use AN/PSM-45A multimeter to check PLGR antenna cable.	g. PLGR antenna cable open or intermittent. Replace antenna cable. PLGR antenna cable checks OK, replace PLGR antenna. If antenna and antenna cable check OK, continue with step h.
	h. PLGR, antenna cable, and antenna are now verified. Original symptom persists.	h. Check serial interface data cable connections (between the PLGR (W3P), SIAD (W3) and Processor Unit for physical damage (cable and connector pins). Scorched or burnt pins indicate a possible bad PU serial port. Use AN/PSM-45A multimeter to check for shorts/opens. If the W3P has an internal short/open, change the cable. If the W3P is good, check the SIAD adapter for shorts/opens. If the W3P cable and W3 SIAD adapter do not indicate a short/open, replace the PU.

Table 2–12. Loss of Connectivity Troubleshooting

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
1	Message data not transmitted or received. (Comm Status is A (amber), R (red), G (green) and icons are stale or has self icon only.) **NOTE** Ensure system has had enough time to enter the network.	a. None	a.1 Verify Role ID not set to Generic. If not properly set, reconfigure Role (refer to Table 2–22). Problem solved. If not, continue. a.2 Verify Server is operational. If operational, continue. a.3 Check Filter setting. If incorrect set to proper setting. If correct, continue with step b.
		b. Verify that operator has re-initialized AN/UYK-128(V) computer, SINCGARS, INC, and EPLRS. Do not shut down PLGR.	b.1 If not then follow specific shutdown procedures for AN/UYK-128 computer, SINCGARS and EPLRS (when applicable). b.2 Re-initialize, first radios, then AN/UYK-128(V) computer. b.3 Message data is transmitted/received. b.4 Message data is not transmitted and/or received, go to step c.
		c. Select Status (F5) button on Ops screen.	c.1 Open Local Comm folder and check router status. If router status shows No Go or Degraded, open router folder. c.2 Proceed to step d if PPP is No Go. c.3 Proceed to step 2 if SINCGARS status is Degraded. c.4 Proceed to step 3 if SINCGARS status is No Go. c.5 Proceed to step 4 if EPLRS status is No Go.
		NOTE Following check is for the INC. d. Router file indicates status of No Go or Degraded. Open Router file and verify PPP status. If PPP status is No Go, proceed to d.1. If PPP status is Go, proceed to No. 2.	d.1 Shutdown INC and AN/UYK-128(V) computer. Disconnect W3N connector from INC J6 connector. Inspect W3N connector to ensure it is not corroded or missing O-ring. Clean and/or replace O-ring as required. Reconnect W3N connector to J6 INC connector. Reapply power to INC and AN/UYK-128(V) computer. Wait 2 to 3 minutes – problem solved. If not, continue with d.2.

Table 2–12. Loss of Connectivity Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
1 (Cont.)	Message data not transmitted or received. (Comm Status is A (amber) or R (red) and/or icons are stale.) (Continued)		d.2 Perform procedure to clear INC (refer to paragraph 2-12). Problem solved. If not, continue with d.3. d.3 Perform continuity check on W3N and W3 SIAD cable/adapter. Continuity indicates shorts or opens, replace cable/adapter. Continuity OK, replace PU. Problem solved. If not, replace INC.
2	SINCGARS status indicates Degraded. **NOTE** You will get degraded interface if you are the only one up in the net and all of your other settings are correct.	a. Ensure SINCGARS R/T is set to Channel 1. b. Check to ensure SINCGARS R/T W4 cable is properly connected. (i.e., A R/T to A DATA connector.) (See Figure 2-4.) c. Check to ensure Julian date and time is correct on R/T. d. Perform voice communication with SA net member to ensure the radios are communicating.	a. If not, set to Channel 1. Problem solved. If not, continue to step b. b. If not properly connected, make corrections. Problem solved. If not, continue with step c. c. If not properly set, correct setting. Problem solved. If not, continue with step d. d. If unable to communicate, check antenna cable, antenna, or SINCGARS ASIP for fault.

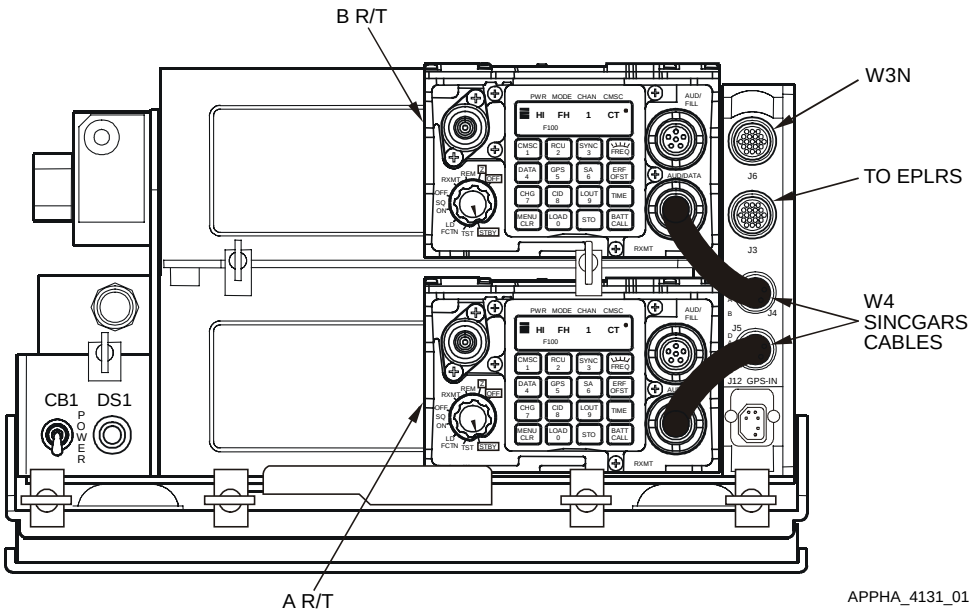


Figure 2-4. SINCGARS ASIP And INC Connections

Table 2–12. Loss of Connectivity Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
3	SINCGARS status indicates No Go.	a. Expand SINCGARS file to show interface, Net ID/Frequency and Packet mode status.	a.1 Proceed to step b for Interface No Go status, step c for Net ID/Frequency No Go status and step d for Packet mode No Go status. a.2 If all are No Go check R/T for fill.
	b. SINCGARS Interface status is No Go or Degraded.	b. Check SINCGARS ASIP R/T to ensure it is set to PCKT mode and Channel 1. **NOTE** Select STATUS and check: SINCGARS1 = R/T A is selected, or SINCGARS2 = R/T B is selected.	b.1 If not, set to PCKT mode and Channel 1. – problem solved. If not, continue with b.2. b.2 Check that correct SINCGARS ASIP R/T (A or B) is being used for FBCB2. If not, reconnect and ensure proper SINCGARS ASIP R/T setup – problem solved. If not, continue to b.3. b.3 Check for loose, bad (corroded or missing O-ring) or missing VAA/INC W4 cable (Figure 2-4) – problem solved. If not, continue to b.4. b.4 Reload COMSEC and attempt voice communication – problem solved. If not, troubleshoot SINCGARS ASIP and/or antenna.
	SINCGARS file Net ID/Frequency status is No Go.	c. Check to ensure proper radio Net ID (SINCGARS ASIP R/T) and (FBCB2 Net ID) frequencies are set to the same frequency.	c.1 Change if not correct – Problem solved. If not, continue with c.2. c.2 Reset RHDDC IAW 2-13. Problem solved. If not, replace RHDDC.
	SINCGARS Packet file status is No Go.	d. SINCGARS Packet file status is No Go.	d.1 Change SINCGARS ASIP R/T to PCKT mode – problem solved. If not, continue with d.2. d.2 If SINCGARS ASIP R/T will not set to PCKT mode, troubleshoot SINCGARS ASIP. If it does set to PCKT mode, continue with d.3. d.3 Attempt voice communication. Voice communication successful, problem solved. If not, troubleshoot SINCGARS ASIP and/or antenna cable and antenna.

Table 2–12. Loss of Connectivity Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
4		**NOTE** Following check is for platforms equipped with the EPLRS radio.	
	EPLRS status No Go or not receiving SA or C2. **NOTE** Ensure system has had enough time to enter the network.	a. Expand EPLRS folder. LCNs status indicate No Go or Not Tested.	a. Continue
		b. EPLRS OUT OF NET light blinks once every second (cannot find network) or EPLRS ALARM and OUT OF NET lights steady on.	b. Check the following: 1) Ensure EPLRS antenna is connected. 2) Check to make sure COMSEC is keyed into EPLRS (perform test with URO to ensure that an @S or @C is returned). If not, load COMSEC.
		c. EPLRS OUT OF NET light blinks once every 4 seconds (unit caught in a track net).	c. Recycle EPLRS power. Problem solved. If not, use the URO to verify status of EPLRS and fix problem.
		d. EPLRS appears to be operating correctly.	d. Clear INC, cycle power on EPLRS radio, reload router. Problem solved. If not, Replace RHDDC.

Table 2–13. Processor Unit Troubleshooting

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
1	DU **CPU** Amber LED light is illuminated indicating degraded PU operation – or temperature warning due to elevated temperatures. (PU is still operating.)	Verify that PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 cooling fins are clean and not blocked in any way. **NOTE** PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 does not have cooling fins but surfaces must remain clear to radiate heat.	a. If the cooling fins are still warm, a damp cloth may be used to cool the unit quickly. b. If after 5 to 10 minutes of operation the **CPU** amber LED remains illuminated, replace the PU.
2	DU **CPU** red LED light is illuminated (indicates PU has failed or stopped).	Shut down power. Verify that PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 cooling fins are clean and not blocked in any way. **NOTE** PU NSN 7021-01-475-0217/ NSN 7021-01-487-0579 does not have cooling fins but surfaces must remain clear to radiate heat.	a. Clear and clean cooling fins. Restore power and re-initialize cooled unit. b. If Display Unit **CPU** red LED light remains illuminated, replace PU.
3	**NOTE** This step is for PU NSN 7021-01-475-0217/ NSN 7021-01-487-0579. a. AN/UYK-128 computer fails to revert to backup battery power with loss of vehicle power.	a. PU Battery Box front battery indicator has less than 3 or no LCD lights illuminated:	a.1 With the AN/UYK-128(V) computer operating, charge the battery for 8 hours. a.2 Battery Box has at least 3 LCD bars illuminated –Problem resolved. a.3 If not, replace rechargeable batteries in Battery Box with recharged batteries. Battery Box LCD bars illuminate - Problem is resolved. a.4 If not, replace Battery Box in PU. a.5 If not, replace PU.

Table 2–13. Processor Unit Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
3 (Cont.)	**NOTE** This step is for PU NSN 7021-01-474-3793/ NSN 7021-01-487-0578.	**NOTE** AN/UYK-128(V) computer has to be powered up to check diagnostic codes. If the Battery Tray diagnostic code fails to display (no illumination) proceed to step 4.	
	b. AN/UYK-128 computer fails to revert to backup battery power with loss of vehicle power.	b. Press button twice on Battery Tray to display diagnostic codes. Diagnostic code 05 is displayed.	b.1 With the AN/UYK-128(V) computer operating, charge the battery for 8 hours. b.2 Battery Tray does not display diagnostic code 05 – Problem resolved. b.3 If diagnostic code 05 is still displayed, replace rechargeable battery in front of Battery Tray with recharged battery. b.4 Battery Tray Does not display diagnostic code 05. Problem is resolved. b.5 If diagnostic code 05 is still displayed, replace Battery Tray in Processor Unit – Problem is resolved. b.6 If problem not resolved, replace Processor Unit.
4	**NOTE** This step is for PU NSN 7021-01-474-3793/ NSN 7021-01-487-0578.	**NOTE** AN/UYK-128 computer has to be powered up for the Battery Tray diagnostic button to work. Press diagnostic button at front of Battery Tray.	
	No LCD displayed on Battery Tray when diagnostic button pressed.		a. No LCD displayed, replace 9V non-rechargeable battery in Battery Tray – Problem resolved. b. If not, replace Battery Tray.

Table 2–13. Processor Unit Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
5	AN/UYK-128(V) computer locks-up or runs slow. **NOTE** A highlighted exclamation point (!) may be displayed on the F5 Status… button indicating the disk drive is at or near capacity.	Try rebooting the AN/UYK-128(V) computer.	a. Rebooting solves the problem. If not, Clear Logs and Queues. (Refer to Table 2–21.) Problem solved. If not continue. b. Reconfigure platform Role/ID IAW paragraph 2–19. This solves the problem. If not continue. c. Reseat the RHDDC. Problem solved. If not, continue. d. Make Master. IAW paragraph 2-13. Problem solved. If not then continue. e. Replace RHDDC. Problem solved. If not continue. f. Replace PU.
6	DU PWR amber LED is illuminated.	None	Replace PU
7	DU CPU red LED is illuminated or blinking.	Check that vehicle power is in range 18Vdc to 33Vdc.	If out of range call for vehicle maintenance. If power checks OK, replace PU.

NOTE

DU screen will go blank (screen saver) after 45 minutes of inactivity.

Table 2–14. Display Unit Troubleshooting

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
1	DU **DISP** amber LED illuminate indicates Degraded display operation.	Verify that Display is not in direct sunlight. Shutdown the system and let cool for 20 minutes.	Restore power and reinitialize the cooled unit. If after 5 to 10 minutes of operation the **DISP** amber LED lights, replace the DU.
2	DU **DISP** red LED is illuminated. Indicates Display shutdown or failure.	Verify that display is not in direct sunlight. Shutdown the system and let cool for 20 minutes.	Restore power and reinitialize the cooled unit. If the DU **DISP** red LED is illuminated – replace DU.
3	Display screen does not illuminate. (Black Screen.)	a. Check **DISP** green LED light is illuminated. b. Press DU **PWR** button and hold for 4 seconds. **DISP** green LED and screen should light. c. Advance screen brightness level (BRT+) at least 4 times to make sure brightness is not turned down. d. For PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 open PU access door, observe POST LED indicator. e. For Processor Unit NSN 7021-01-474-3793/NSN 7021-01-487-0578 open PU access door, push button to view diagnostic messages.	a. Press BLK OUT LAMP button to verify that it is not in blackout mode. Screen lights, problem solved. If not, go to step b.1. b.1 If LEDs do not light, press FCN and LED BRT+ together and hold for several seconds. If LEDs light, proceed to b.2. If not, troubleshoot for power. b.2 LED lights but screen doesn't, go to c. Screen lights, problem solved. c. Check brightness level each time it is advanced. If screen remains dark for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 go to step d. For PU NSN 7021-474-3793/NSN 7021-01-487-0578 proceed to step e. d.1 POST LED indicator is dark (not illuminated), replace PU. d.2 POST LED indicator illuminated green, replace DU. e.1 For dC message 02 replace PU. e.2 For dC message d1 or d2 replace DU.

Table 2-14. Display Unit Troubleshooting (Continued)

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
4	Display screen is dim and hard to read.	a. Check DU PWR LEDs.	a. DU PWR LED is red check for loss of vehicle power. b. DU PWR LED is green, verify screen brightness is not turned down (press BRT + button on Display Unit control and indicator panel several times. Screen lights up, problem solved. If not, replace Display Unit.
5	Display screen is illuminated, nothing is displayed. (white screen.)	Try restart/re-boot.	Replace Display Unit. Problem is solved. Problem not solved, replace cable W2.
6	DU screen is illuminated and data distorted or no data and streaks across screen.	Try restart/re-boot.	a. Screen is clear, problem solved. If not, go to b. b. Replace PU, problem solved. If not, go to c. c. Replace DU, problem solved. If not, go to d. d. Replace cable W2.
7	DU touch screen does not respond to touch or responds improperly.	Perform touch screen calibration.	a. Problem solved. If not, continue with b. b. Reboot AN/UYK-128(V) computer and calibrate touchscreen. Problem solved. If not, continue with c. c. Replace DU. Problem solved. If not, continue with d. d. Replace RHDDC. Problem solved. If not, continue with e. e. Replace PU. Problem solved. If not, replace W2 cable.
8	DU screen indicates stuck button (CPU red LED is blinking).	Push indicated stuck button on DU several times.	Reboot the AN/UYK-128 computer. Problem solved. If not, replace DU.
9	DU button(s) do not work.	Check to ensure W2 cable is properly secured.	Reboot system. Problem solved. if not, replace DU.
10	DU LEDs PWR, DISP, or CPU fail to illuminate and DU screen is functioning properly.	On DU control and indicator panel, press Lamp button and FCN button at same time to perform lamp test.	PWR, DISP, and CPU LEDs cycle red, amber, and green. If not, replace DU.

Table 2–15. Keyboard Unit Troubleshooting

NO.	SYMPTOM	TEST OR INSPECTION	CORRECTIVE ACTION
1	Keyboard/ Mouse does not work.	a. Check to ensure KU cable to J2 on DU is properly connected. b. Disconnect the KU cable from J2 of the DU. c. Check for +5V between display J2 pin 1 (GND) and J2 pin 6 (+5V).	a. If not properly connected, shutdown power and reconnect KU cable. Power up AN/UYK-128(V) computer. Problem solved. If not, continue. b. None c.1 If the +5V is missing or incorrect, replace the DU. c.2 If the +5V is correct, replace the KU.
2	Single or multiple keys do not operate. Also mouse and/or mouse switches do not operate.	a. Shut down AN/UYK-128(V) computer and disconnect the Keyboard Unit cable from the DU. Check the KU cable connector for dirty or bent pins. b. Check the J2 female connector on the Display Unit for dirt/damage.	a. Clean connector pins if possible, or replace Keyboard Unit. b. If Display Unit J2 connector female pins are clogged or damaged, replace the Display Unit.
3	Keyboard back lighting does not light. **NOTE** The KU back lighting can only be seen in dimly lighted environment, not in normal light.	Verify that the Display Unit **BLK OUT** button has not been pressed. (Press it in an attempt to restore lighting.)	a. If light can be restored by pressing the **BLK OUT** button, the keyboard is OK. b. Press the  key on the upper right row of keypad of the Keyboard Unit, cycling it through the 5 levels of brightness. If brightness not restored, replace Keyboard Unit.
4	DU screen indicates stuck key (CPU red LED is blinking).	Push indicated stuck key on KU several times.	Reboot the AN/UYK-128 computer. Problem solved. If not, replace KU.

2–9 SPECIFIC PLATFORM TROUBLESHOOTING PROCEDURES

Table E-1 in Appendix E is a Cable-To-Platform Matrix. To locate the correct assembly and wiring diagrams for each cable, find the applicable platform in the platform column (vertical) then the cable type (horizontal). At the intersection will be the figure numbers for the Assembly (A-) and Wiring (W-).

Platforms with unusual cables are listed directly under the name of the platform. For interconnection diagrams, hardware part numbers and additional hardware information, refer to the applicable appendix (APP.) column for the platform in TB 11-7010-326-20. Table E-1 in Appendix E also specifies cable assembly and cable wiring diagrams.

SECTION V. MAINTENANCE PROCEDURES

2–10 REMOVAL/REPLACEMENT INSTRUCTIONS

This section contains the Removal/Replacement instructions for the computer assemblies and cables. Removal/Replacement instructions for the mounting assemblies are not usually common and are therefore found in the applicable platform Appendix at the end of this document. Before a part or assembly is removed from a vehicle, fill out a “Maintenance Request” DA Form 2407. One copy of this completed form must remain with the vehicle and the remaining copies must be kept with the faulty component. To verify operation after final replacement, perform Functional Check (paragraph 2–7.2).

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128 computer and PLGR. Failure to comply will result in equipment damage.

CAUTION

Water may enter the Processor Unit. Before wash-down, ensure that the Removable Hard Disk Drive Cartridge access door is closed and all connectors are properly covered with cable connectors or caps. Failure to do so may result in equipment damage.

NOTE

Each time a connection is broken, both connectors (at the LRU and at the cable) are exposed to possible contamination. Do not allow cable connectors to fall into an unclean area (the ground or a dirty compartment). The LRU and cable connectors have protective caps. These connectors must be covered with the protective caps when not connected together. Do not allow fingers or chemicals to make contact with the connector pins. Do not allow moisture to contaminate connector pins.

NOTE

While replacing electrical tie down straps (tie-wraps), replace any tie-down mounting base (tie-wrap holder) that is damaged.

2–10.1 REMOVE/REPLACE KEYBOARD UNIT (KU)

2–10.1.1 REMOVE KEYBOARD UNIT (KU)

NOTE

Operator must remove locks from all AN/UYK-128(V) computer equipment before maintenance can be conducted.

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Keyboard Unit should be disconnected and properly stowed when not in use to prevent it from causing equipment damage.

a. Power down AN/UYK-128(V) computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

b. Disconnect KU cable connector from display J2 connector if connected as shown in Figures 1-1 & 1-2. (See Figure 2-5 & Figure 2-6 for Keyboard Configurations).

c. Remove keyboard from KU stowage box if necessary.

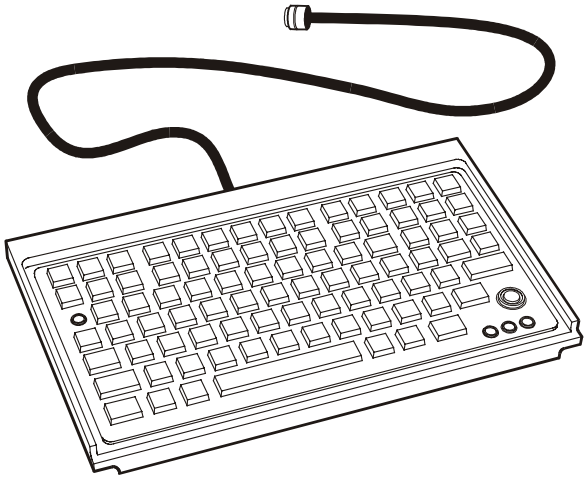
2–10.1.2 REPLACE KEYBOARD UNIT (KU)

a. Connect KU cable connector to display J2 connector as shown in Chapter 1, Figures 1-1 & 1-2.

b. Perform Functional Check according to paragraph 2-7.2.

c. Select Free Text Message.

d. Type all numbers, letters, and special characters to validate keyboard operation.



APPPA_4003_01

Figure 2-5. Keyboard Unit (KU) NSN 7025-01-474-3792

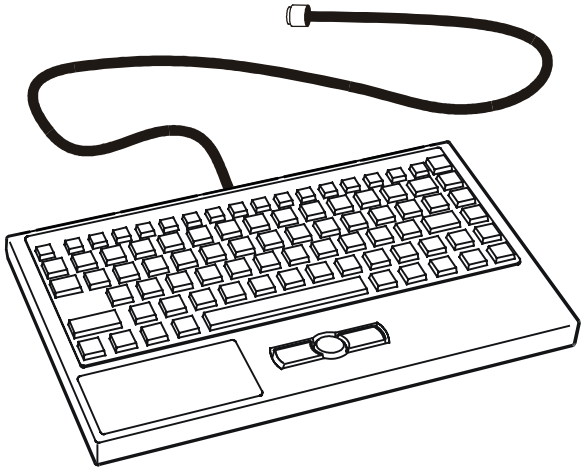


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Figure 2-6. Keyboard Unit (KU) NSN 7025-01-474-3791/NSN 7025-01-487-0581

2–10.2 REMOVE/REPLACE DISPLAY UNIT (DU)

Refer to Figure 2-7 and Figure 2-8.

2–10.2.1 REMOVE DISPLAY UNIT (DU)

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

WARNING

Backlights in display may break and leak Mercury and Lead. If Mercury and Lead are exposed, avoid contact with skin, eyes, and clothes, and don't breathe vapors. Immediately contact the proper authorities so that spillage can be properly removed and if necessary, appropriate medical aid administered. Dispose of Mercury and Lead IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

The internal display inverters operate at high voltages. Electrical shock may occur and cause injury to personnel and/or death. Do not disassemble the display.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128 computer and PLGR. Failure to comply will result in equipment damage.

CAUTION

Do not shut down the computer power without first following software shutdown procedures. Failure to comply may cause loss of data.

2–10.2.1 REMOVE DISPLAY UNIT (DU) (Continued)

a. Power down AN/UYK-128(V) system IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

b. Disconnect W2-P2 display cable connector from display J1 connector.

c. Disconnect KU cable connector from display J2 connector if connected.

d. Install protective cap on display J2 connector.

e. Remove wing nut and lock washer from E1 ground stud.

f. Remove braided ground cable from E1 ground stud.

g. Install wing nut and lock washer on E1 ground stud.

h. Remove tie-wraps securing W2 display cable or ground strap as required using diagonal wire cutters.

i. Loosen four (4) captive screws on DU using ¼" flat-tip screwdriver.

j. Remove DU from display isolation assembly.

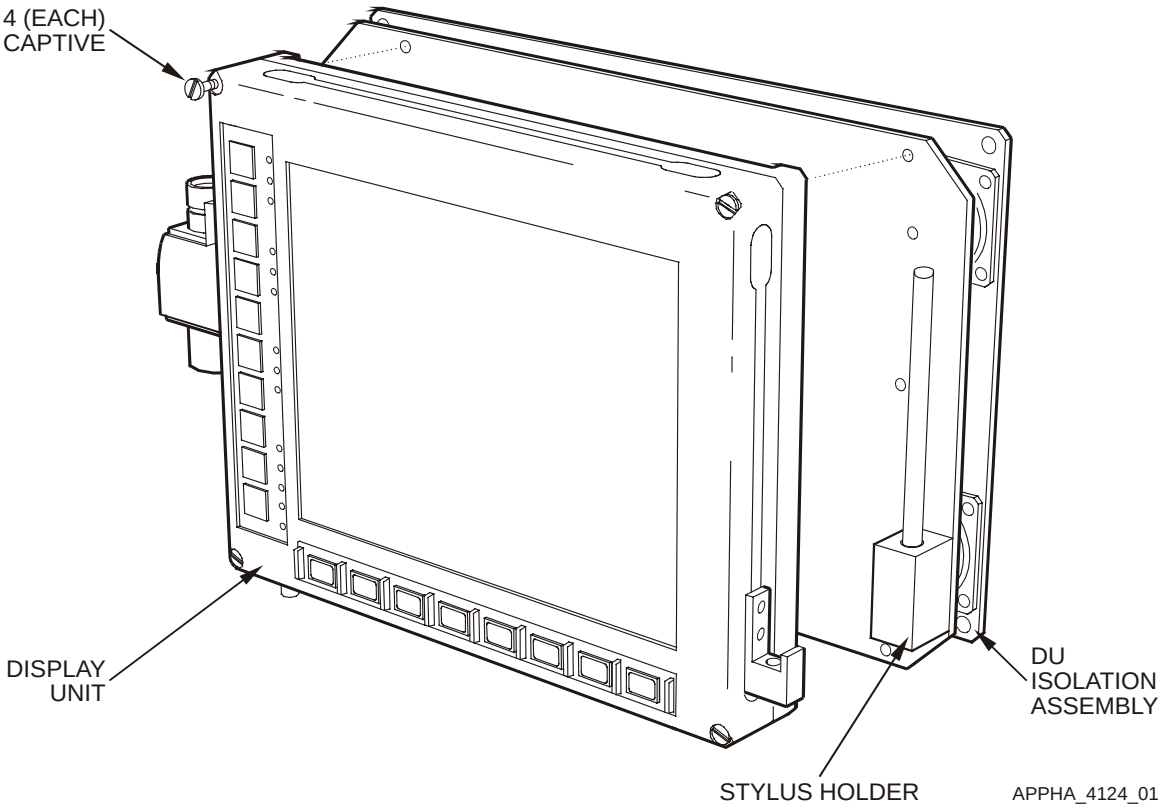

Figure 2-7. Remove/Replace Display Unit NSN 7025-01-475-0229 (10.4") or NSN 7025-01-475-0282 (10.4"/12.1")

2–10.2.1 REMOVE DISPLAY UNIT (DU) (Continued)

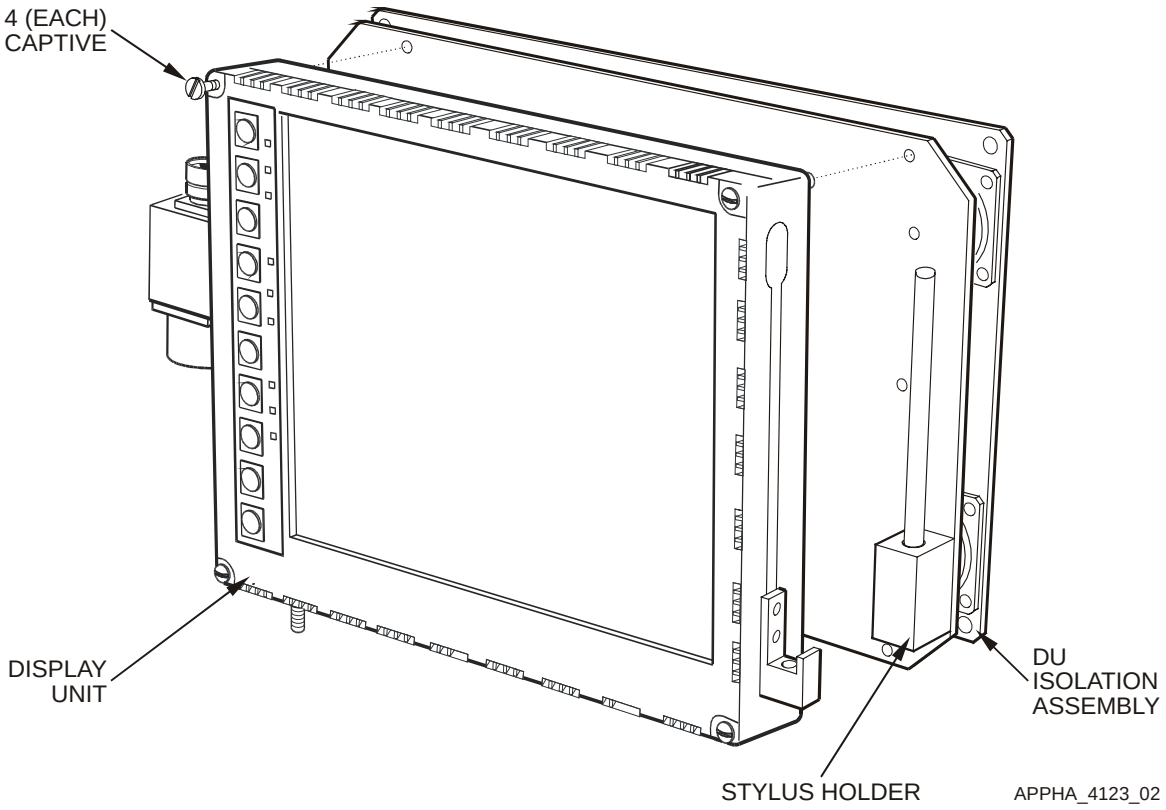

Figure 2-8. Remove/Replace Display Unit NSN 7025-01-475-0280 (12.1”)

2–10.2.2 REPLACE DISPLAY UNIT (DU)

a. Align four (4) DU captive screws with threaded inserts in display isolation assembly top plate.

b. Tighten four (4) captive screws using ¼" flat-tip screwdriver.

c. Remove wing nut and lock washer from E1 ground stud.

d. Install braided ground strap on E1 ground stud.

e. Install wing nut and lock washer on E1 ground stud.

f. Remove protective cap from display J1 connector.

g. Connect W2-P2 display cable connector to display J1 connector.

h. Connect KU cable connector to display J2 connector.

i. Perform AN/UYK-128(V) system startup and login procedures IAW paragraph 2-7.2.

NOTE

Touch screen calibration also serves as DU functional check.

j. Perform Touch Screen Calibration IAW paragraph 2-7.1 of this manual if a new display unit has been installed.

k. Perform Functional Check IAW paragraph 2-7.2 of this manual.

WARNING

Vehicle-specific for all HMMWV variants, M9 Ace, M548A3 Volcano, M1070 HET, M93A1 Fox, HEMTT/PLS, 2.5 Ton Truck, 5-Ton Truck:

Drivers viewing display unit while operating vehicle may result in personnel hazards/equipment damage. Drivers should not view display unit while vehicle is in motion, unless otherwise dictated by Standard Operating Procedures (SOP) unique to that platform.

WARNING

Vehicle-specific for HEMTT/PLS, M35A3 2.5 Ton Truck, all HMMWV variants (except M031 and Avenger):

Display unit may obstruct view of front windshield and side window. Maximize driver's field-of-view by adjusting and aligning the display unit with the A-Pillar prior to vehicle operation.

Vehicle-specific for M548A3 Volcano

Display may obstruct view of front windshield if not properly adjusted. Maximize driver's field-of-view by positioning the display below the windshield as much as possible.

WARNING

Vehicle-specific for HEMTT/PLS:

Display may obstruct view of windshield and right side window. Maximize driver field-of-view prior to vehicle operation.

2–10.3 REMOVE/REPLACE PROCESSOR UNIT (PU)

Refer to Figure 2-9, Figure 2-10 and Figure 2-11.

2–10.3.1 REMOVE PROCESSOR UNIT (PU)

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system including the PLGR is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128 computer and PLGR. Failure to comply will result in equipment damage.

CAUTION

Do not shut down the computer power without first following software shutdown procedures. Failure to comply may cause loss of data.

NOTE

The PU may have a thermal guard (Figure 2-9) and/or locking bracket (Figure 2-13) which must first be removed, then later reinstalled when PU is replaced. If the PU does not require replacement, the thermal guard and locking bracket may remain in place.

a. Power down AN/UYK-128(V) system IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

b. Disconnect W1-P2 power cable connector from PU J1 connector.

c. Disconnect W4-P1 audio cable connector from PU J2 connector if vehicle is equipped with intercom system.

d. Disconnect W3-P1 SIAD cable connector from PU J3 connector.

e. Disconnect W2-P1 display cable connector from PU J4 connector.

2–10.3.1 REMOVE PROCESSOR UNIT (PU) (Continued)

f. Disconnect W5 Universal Serial Bus (USB) connector from PU J5 connector if PU is used in this configuration.

g. Remove wing nut and lock-washer from E1 ground stud.

h. Remove braided ground strap from E1 ground stud.

i. Install wing nut and lock-washer to E1 ground stud.

j. Loosen two (2) self-locking front retainers on PU until sleeve clears front hook.

k. Slide PU on guides until left and right mounting brackets clear the rear retainers.

l. Remove PU.

m. Install protective caps on PU cable connectors.

NOTE

If PU is being removed to facilitate other maintenance, do not remove the RHDDC, locking bracket, thermal guard, and/or top-mounted keyboard stowage box if so equipped. If PU is being replaced, the RHDDC, locking bracket, thermal guard, and/or top-mounted keyboard stowage box (as equipped) must be removed from the faulty unit and transferred to the replacement PU. Perform the steps below as required.

n. Remove two (2) flat head screws from PU locking bracket using a No. 2 cross-tip screwdriver.

o. Remove locking bracket from PU.

CAUTION

Wait at least 10 seconds after Processor Unit (PU) is powered down, to allow the disks to stop spinning, before removing the Removable Hard Disk Drive Cartridge (RHDDC). Failure to comply could result in equipment damage.

p. Loosen captive fasteners and open PU RHDDC access door.

q. Remove RHDDC from PU IAW paragraph 2.10.4.1.

NOTE

Steps r and s below are for the PUs with the thermal Guard. The Platforms are M113 APC Common, M1031 CUCV, M93 Fox, M9 ACE, M998/M1026/M1038 HMMWV, and the M923 5-Ton.

r. Loosen four (4) captive screws in PU thermal guard (see) using a No. 2 cross-tip screwdriver.

s. Remove thermal guard from PU.

2–10.3.1 REMOVE PROCESSOR UNIT (PU) (Continued)

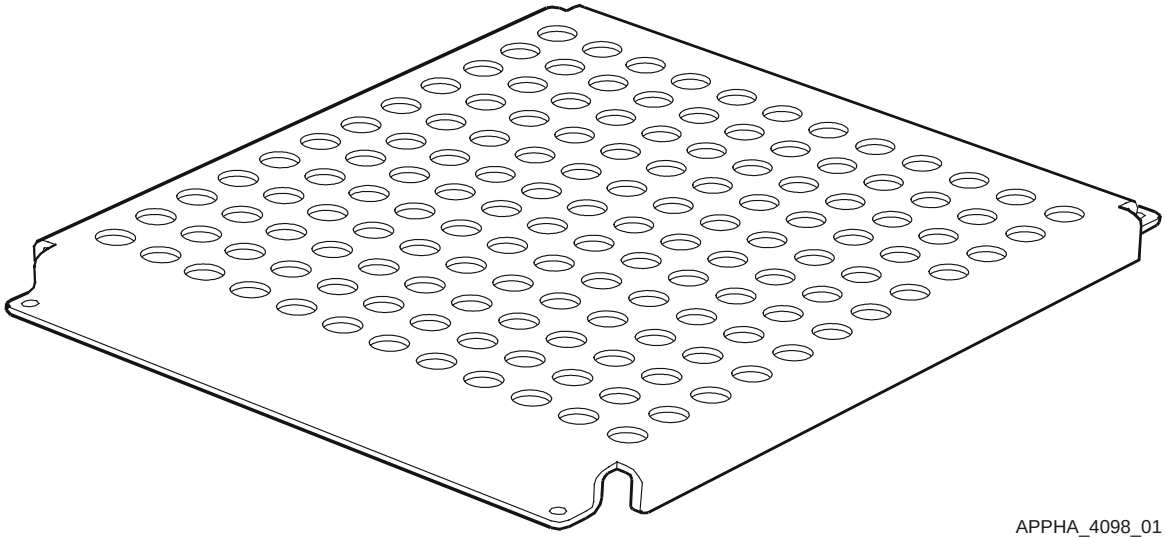

Figure 2-9. Thermal Guard

NOTE

Steps t and u, below, are for the Platforms where the keyboard stowage box P/N 872845-1 is mounted on top of the PU.

t. Loosen four (4) captive screws in top-mounted keyboard stowage box using a No. 2 cross-tip screwdriver.

u. Remove keyboard stowage box from the PU.

NOTE

Steps v and w, below, are for Platforms M1031 CUCV Shop Van and M998/M1026/M1038/HMMWV I-Rack that have Connector Guards.

v. Loosen the two screws securing the Connector Guard to the PU.

w. Remove the Connector Guards.

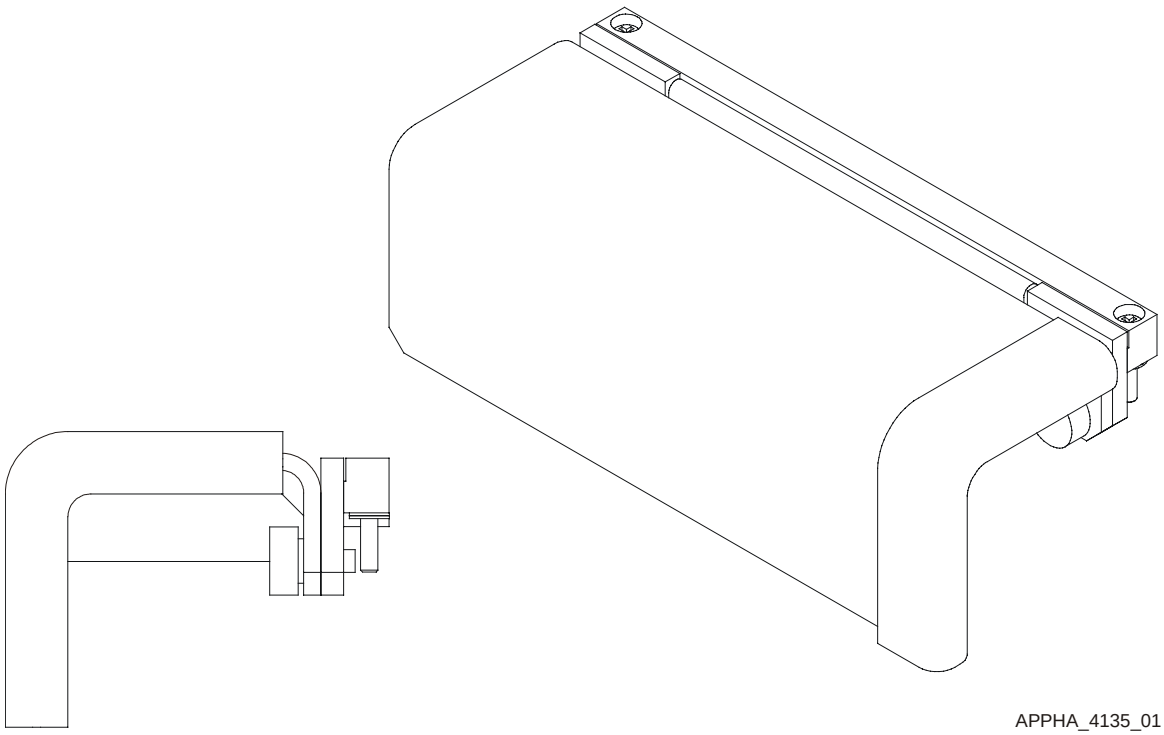

Figure 2-10. Connector Guard for the HMMWV Platform

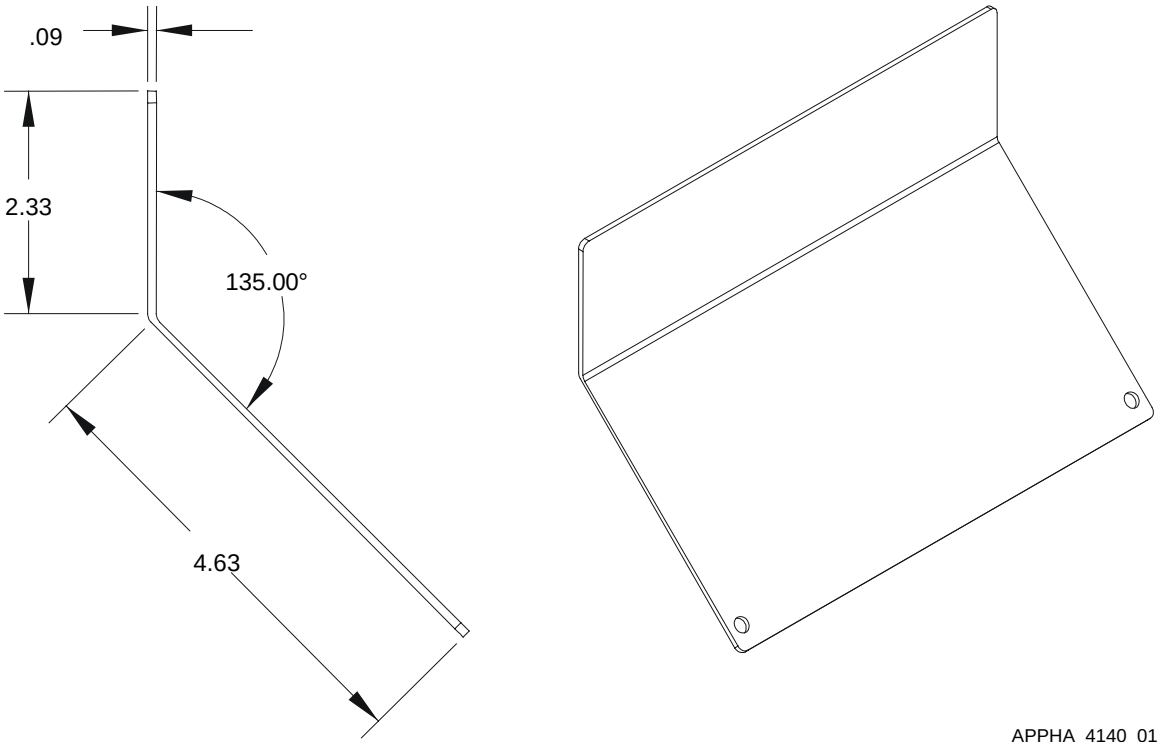

Figure 2-11. Connector Guard for the M1031 CUCV Platform

2–10.3.2 REPLACE PROCESSOR UNIT (PU)

NOTE

If PU was removed to facilitate other maintenance, do not remove the RHDDC, locking bracket, thermal guard, and/or top-mounted keyboard stowage box if so equipped. If PU was replaced, the RHDDC, locking bracket, thermal guard, and/or top-mounted keyboard stowage box (as equipped) from the faulty unit must be reinstalled on the replacement PU. Perform the steps below as required.

a. Loosen captive fasteners and open RHDDC access door.Install original RHDDC into replacement PU IAW paragraph 2.10.4.2 below.

b. Align holes in locking bracket with tapped holes in PU.

c. Install two (2) flat head screws using a No.2 cross-tip screwdriver and secure locking bracket to PU.

NOTE

Steps e and f, below, are for the PUs requiring the thermal Guard. The Platforms are M113 APC Common, M1031 CUCV, M93 Fox, M9 ACE, M998/M1026/M1038 HMMWV, and the M923 5-Ton.

d. Align four (4) thermal guard captive screws with holes in top of PU.

e. Tighten four (4) captive screws in thermal guard using a No. 2 cross-tip screwdriver.

NOTE

Steps g and h, below, are for the PUs that have a top-mounted keyboard stowage box.

f. Align four (4) keyboard stowage box captive screws with holes in top of PU.

g. Tighten four (4) captive screws in keyboard stowage box using a No. 2 cross-tip screwdriver.

h. Align left and right mounting brackets on PU with guides.

i. Slide PU on guides until mounting brackets seat in rear retainers (see Figure 2-12).

j. Slide self-locking front retainer sleeves over front hooks.

k. Tighten self-locking front retainers until hand-tight.

l. Remove wing nut and lock washer from E1 ground stud.

m. Install braided ground strap to E1 ground stud.

n. Install wing nut and lock washer to E1 ground stud.

o. Remove protective caps from PU cable connectors.

p. Connect W2-P1 display cable connector to PU J4 connector.

q. Connect W3-P1 SIAD cable connector to PU J3 connector.

2-10.3.2 REPLACE PROCESSOR UNIT (PU) (Continued)

r. Connect W4-P1 audio cable connector to PU J2 connector if vehicle is equipped with intercom system.

s. Connect W1-P2 power cable connector to PU J1 connector.

t. Connect W5 Universal Serial Bus (USB) cable connector to PU J5 connector if PU is used in Tactical Operation Center (TOC) configuration.

u. Install lock on PU, if required.

v. Perform AN/UYK-128(V) system startup and login procedures IAW Chapter 2, Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

NOTE

Touch screen calibration also serves as PU functional check.

w. Perform Touch Screen Calibration IAW paragraph 2-7.1 of this manual if a new processor unit has been installed.

x. Perform Functional Check IAW paragraph 2-7.2 of this manual.

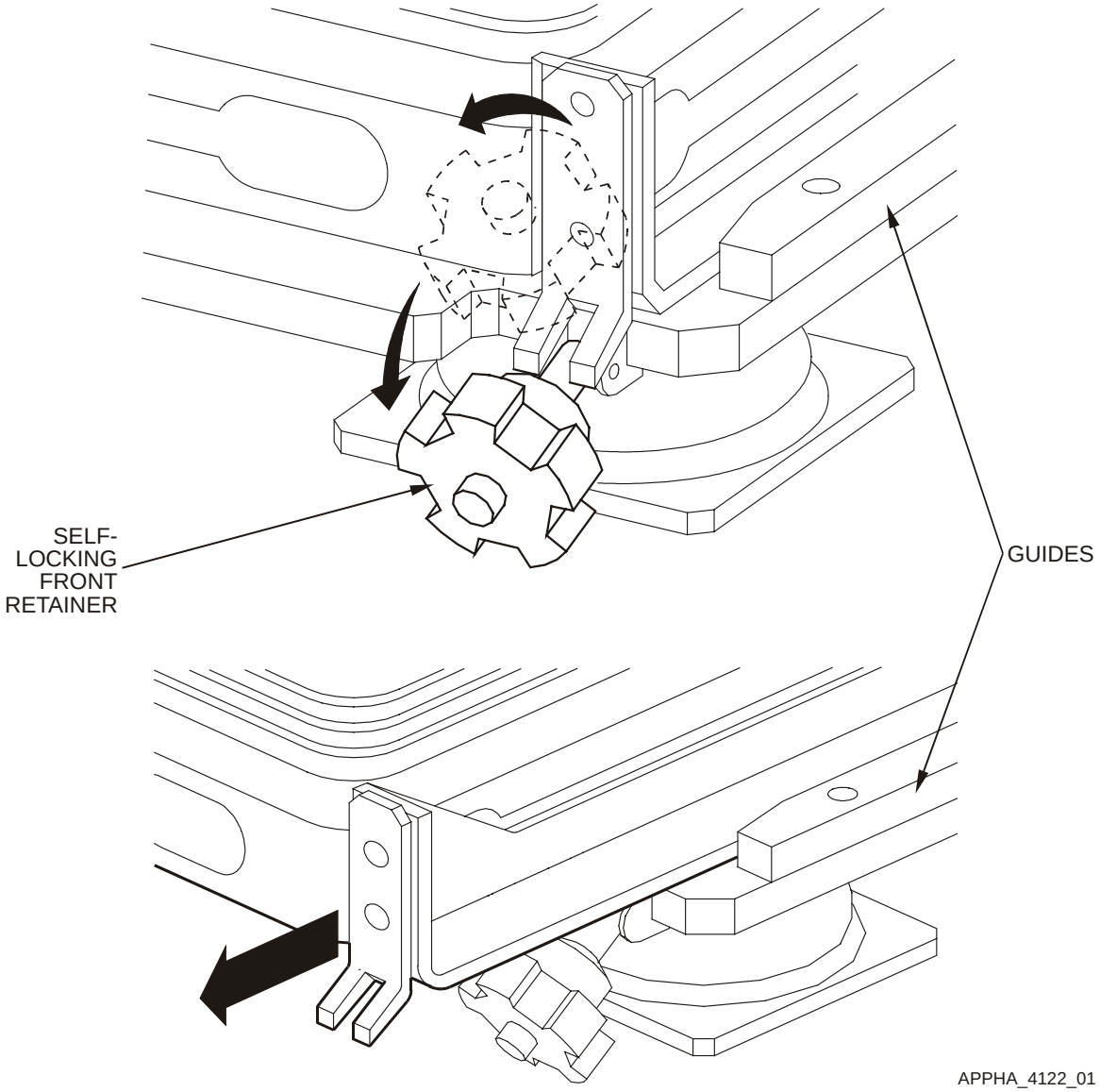

Figure 2-12. PU Self-Locking Front Retainer

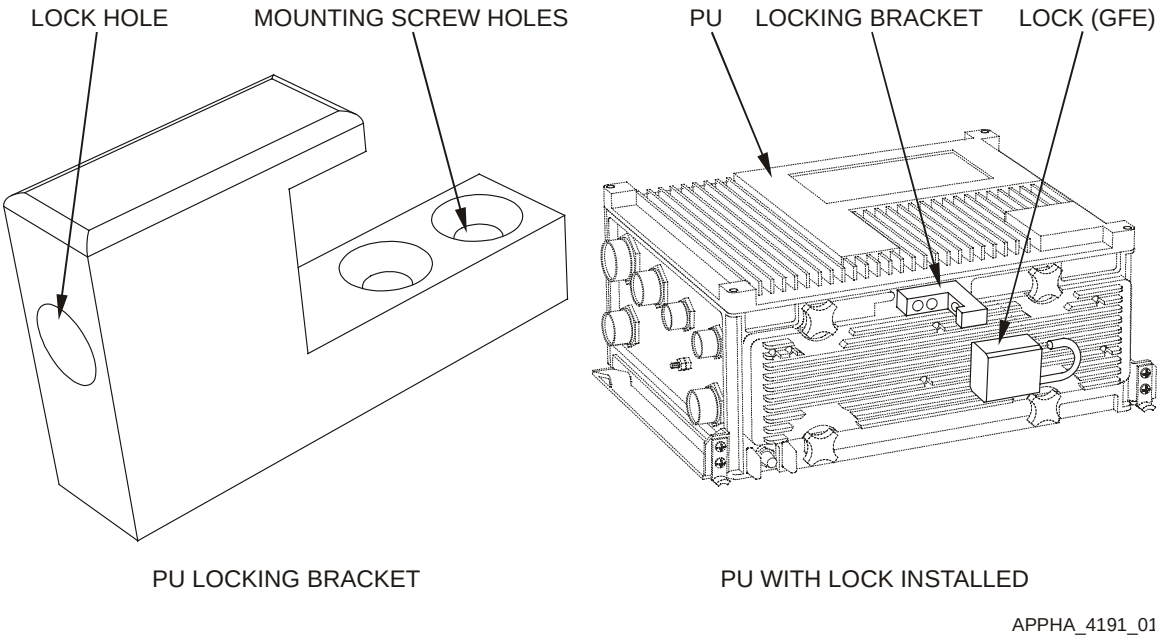

Figure 2-13. Remove/Replace Processor Unit (PU) Locking Components

2–10.4 REMOVE/REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

Remove/Replace RHDDC NSN 7025-01-474-5753 for PU NSN 7021-01-474-0217/NSN 7021-01-487-0579.

Refer to Figure 2-14.

2–10.4.1 REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Not all Removable Hard Disk Drive Cartridge (RHDDC) models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant Technical Manuals (TMs) to determine compatibility with the Processor Unit (PU). Failure to comply could result in equipment damage.

CAUTION

Wait at least 10 seconds after Processor Unit (PU) is powered down to allow disk to stop spinning before removing the Removable Hard Disk Drive Cartridge (RHDDC). Failure to comply could result in equipment damage.

CAUTION

Keep the Removable Hard Disk Drive Cartridge (RHDDC) away from strong magnetic fields and never bang or drop RHDDC on any surface. Failure to comply could result in damage to stored data or equipment damage.

2–10.4.1 REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (Continued)

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit (PU) is powered up. Failure to comply could result in equipment damage.

a. Power down AN/UYK-128(V) computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

b. Open PU guard/kick plate (M548A3 VOLCANO only).

c. Remove chain from the guard (HMMWV only) if not already accomplished.

d. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

e. Loosen six (6) captive fasteners on RHDDC access door.

f. Open RHDDC access door completely.

NOTE

The RHDDC in PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 is located on the interior left side. If the RHDDC is located on the right side of the PU, refer to Paragraph 2-10.5 of this manual for the proper procedure.

g. Pull the two (2) RHDDC retaining latches outward to release the cartridge.

h. Grasp RHDDC wire handle with fingers and pull straight outward with steady pressure until cartridge unseats and clears access door. (If necessary, slightly rock cartridge back and forth to unseat it.)

i. Place RHDDC in protective carrying case.

NOTE

The Removable Hard Disk Drive Cartridge (RHDDC) may contain classified information. Follow applicable security operating procedure when securing and transporting any RHDDC.

j. Secure RHDDC for movement IAW local unit operating procedure.

2–10.4.1 REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (Continued)

NOTE

If replacing RHDDC immediately, skip remaining steps in this paragraph and proceed to Paragraph 2-10.4.2 for cartridge replacement actions.

NOTE

Ensure both retaining latches for the Removable Hard Disk Drive Cartridge (RHDDC) are fully retracted (i.e., folded back completely). Failure to comply may result in equipment damage when closing and securing the access door.

k. Push the two (2) RHDDC retaining latches back over the empty cartridge slot.

l. Ensure thumb screw that holds battery pack in place is securely tightened.

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.

m. Ensure no obstruction, such as wire handle or retaining latch, prevents proper seating of gasket or closure of access door.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

n. Carefully align, close access door and hold it shut.

NOTE

Loosely thread all six (6) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

o. Loosely thread six (6) captive fasteners on access door.

p. Tighten six (6) captive fasteners evenly and securely on access door.

q. Install lock on PU if required.

r. Install chain on the guard (HMMWV only) if required.

s. Close PU guard/kick plate (M548A3 VOLCANO only).

2–10.4.2 REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

Refer to Figure 2-14.

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Not all Removable Hard Disk Drive Cartridge (RHDDC) models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant Technical Manuals (TMs) to determine compatibility with the Processor Unit (PU). Failure to comply could result in equipment damage.

CAUTION

Keep the Removable Hard Disk Drive Cartridge (RHDDC) away from strong magnetic fields and never bang or drop RHDDC on any surface. Failure to comply could result in damage to stored data or equipment damage.

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit (PU) is powered up. Failure to comply could result in equipment damage.

a. Power down AN/UYK-128(V) computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

b. Open PU guard/kick plate (M548A3 VOLCANO only).

c. Remove chain from the guard (HMMWV only) if not already accomplished.

d. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

e. Loosen six (6) captive fasteners on RHDDC access door.

f. Open RHDDC access door completely.

2–10.4.2 REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (Continued)

NOTE

The RHDDC in PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 is located on the interior left side. If the RHDDC is located on the right side of the PU, refer to Paragraph 2-10.5 of this manual for the proper procedure.

g. Pull the two (2) RHDDC retaining latches outward from empty cartridge slot.

h. Remove RHDDC from protective carrying case.

i. Grasp RHDDC wire handle with label facing upward toward top of PU.

j. Insert cartridge into the left slot and carefully slide into place while applying steady pressure until fully seated. (If necessary, slightly rock cartridge back and forth to seat it.)

NOTE

Ensure both retaining latches for the Removable Hard Disk Drive Cartridge (RHDDC) are fully retracted (i.e., folded back completely). Failure to comply may result in equipment damage when closing and securing the access door.

k. Push the two (2) retaining latches inward over the RHDDC to lock it into place.

l. Ensure thumb screw that holds battery pack in place is securely tightened.

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.

m. Ensure no obstruction, such as wire handle or a retaining latch, prevents proper seating of gasket or closure of access door.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

n. Carefully align and close access door and hold it shut.

NOTE

Loosely thread all six (6) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

2–10.4.2 REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (Continued)

o. Loosely thread six (6) captive fasteners on access door.

p. Tighten six (6) captive fasteners evenly and securely on access door.

q. Perform AN/UYK-128(V) system startup and login procedures IAW Chapter 2, Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

NOTE

Touch Screen Calibration also serves as functional check of Removable Hard Disk Drive Cartridge (RHDDC).

r. Perform Touch Screen Calibration IAW Chapter 2 of this manual if a new RHDDC has been installed in the processor unit.

s. Install lock on PU if required.

t. Install chain on the guard (HMMWV only) if required.

u. Close PU guard/kick plate (M548A3 VOLCANO only).

NOTE

If AN/UYK-128(V) computer Removable Hard Disk Drive Cartridge (RHDDC) has been replaced, platform Role/ID may be incorrect and must be reconfigured. Otherwise incoming Command and Control (C2) messages will not be able to be received. In addition, incorrectly relayed information due to wrong platform Role/ID on the vehicle's computer may adversely impact message flow between different echelons.

v. Perform Configure Platform/Role according to paragraph 2–19.

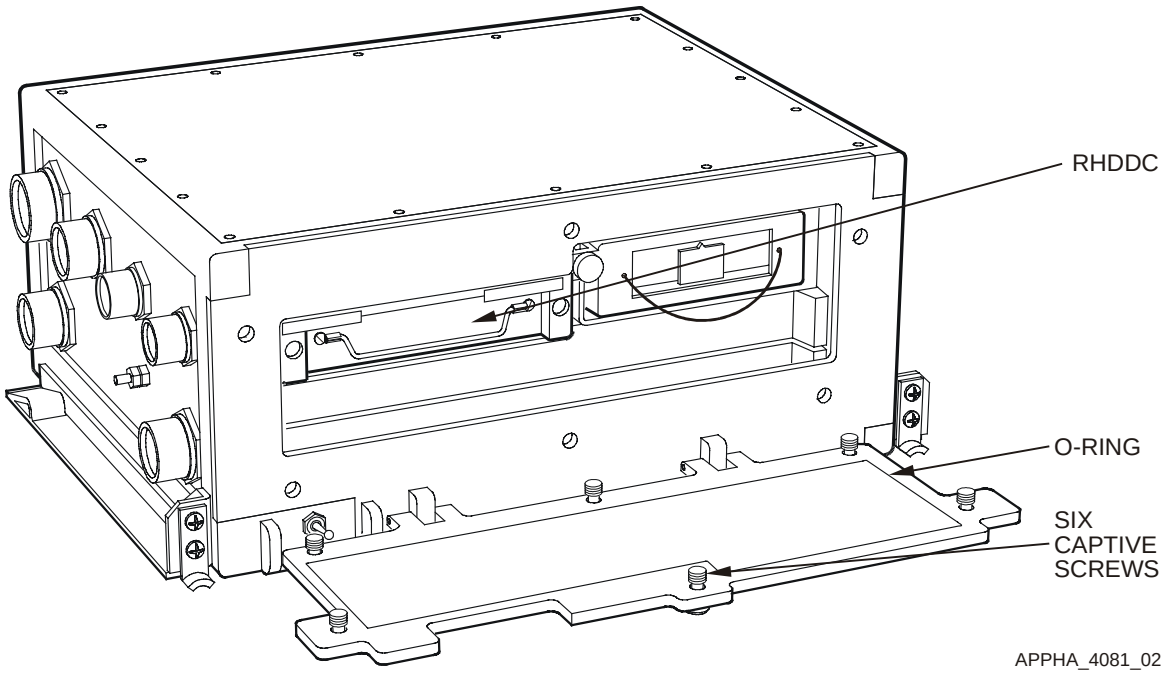

Figure 2-14. Remove/Replace RHDDC NSN 7025-01-474-5753 for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579

2–10.5 REMOVE/REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

Remove/Replace RHDDC NSN 7025-01-474-3789 for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578

Refer to Figure 2-15.

2–10.5.1 REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Not all Removable Hard Disk Drive Cartridge (RHDDC) models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant Technical Manuals (TMs) to determine compatibility with the Processor Unit (PU). Failure to comply could result in equipment damage.

CAUTION

Wait at least 10 seconds after Processor Unit (PU) is powered down to allow disk to stop spinning before removing the Removable Hard Disk Drive Cartridge (RHDDC). Failure to comply could result in equipment damage.

CAUTION

Keep the Removable Hard Disk Drive Cartridge (RHDDC) away from strong magnetic fields and never bang or drop RHDDC on any surface. Failure to comply could result in damage to stored data or equipment damage.

2–10.5.1 REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (Continued)

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit (PU) is powered up. Failure to comply could result in equipment damage.

a. Power down AN/UYK-128(V) computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

b. Open PU guard/kick plate (M548A3 VOLCANO only).

c. Remove chain from the guard (HMMWV only) if not already accomplished.

d. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

e. Loosen four (4) captive fasteners on RHDDC access door.

f. Open RHDDC access door completely.

NOTE

The RHDDC in PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 is located on the interior right side. If the RHDDC is located on the left side of the PU, refer to Paragraph 2-10.4 of this manual for the proper procedure.

g. Pull RHDDC latching handle down to release cartridge.

h. Grasp RHDDC latching handle with fingers and pull straight outward with steady pressure until cartridge unseats and clears access door. (If necessary, slightly rock cartridge back and forth to unseat it.)

i. Place RHDDC in protective carrying case.

NOTE

The Removable Hard Disk Drive Cartridge (RHDDC) may contain classified information. Follow applicable security operating procedure when securing and transporting any RHDDC.

j. Secure RHDDC for movement IAW local unit operating procedure.

NOTE

If replacing RHDDC immediately, skip remaining steps in this paragraph and proceed to Paragraph 2-10.5.2 for cartridge replacement actions.

2–10.5.1 REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (Continued)

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.

k. Ensure no obstruction, such as latching handle, prevents proper seating of gasket or closure of access door.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

l. Carefully align and close access door and hold it shut

NOTE

Loosely thread all four (4) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

m. Loosely thread four (4) captive fasteners on access door.

n. Tighten four (4) captive fasteners evenly and securely on access door.

o. Install lock on PU if required.

p. Install chain on the guard (HMMWV only) if required.

q. Close PU guard/kick plate (M548A3 VOLCANO only).

2–10.5.2 REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

Refer to Figure 2-15.

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Not all Removable Hard Disk Drive Cartridge (RHDDC) models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant Technical Manuals (TMs) to determine compatibility with the Processor Unit (PU). Failure to comply could result in equipment damage.

CAUTION

Keep the Removable Hard Disk Drive Cartridge (RHDDC) away from strong magnetic fields and never bang or drop RHDDC on any surface. Failure to comply could result in damage to stored data or equipment damage.

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit (PU) is powered up. Failure to comply could result in equipment damage.

a. Power down AN/UYK-128(V) computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

b. Open PU guard/kick plate (M548A3 VOLCANO only).

c. Remove chain from the guard (HMMWV only) if not already accomplished.

d. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

e. Loosen four (4) captive fasteners on RHDDC access door.

f. Open RHDDC access door completely.

2–10.5.2 REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (Continued)

NOTE

The RHDDC in PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 is located on the interior right side. If the RHDDC is located on the left side of the PU, refer to Paragraph 2-10.4 of this manual for the proper procedure.

NOTE

The processor unit is mounted up side down in the M985/978/1074/1075/1120 HEMMT/PLS/LHS. Make sure that the RHDDC is in the same plain (up side down) during installation.

g. Remove RHDDC from protective carrying case.

h. Pull down RHDDC latching handle and grasp with label facing upward toward top of PU.

i. Insert cartridge into the right slot and carefully slide into place while applying steady pressure until fully seated. (If necessary, slightly rock cartridge back and forth to seat it.)

NOTE

Ensure Removable Hard Disk Drive Cartridge (RHDDC) latching handle is fully retracted (i.e., rotated up completely). Failure to comply may result in equipment damage when closing and securing the access door.

j. Rotate RHDDC latching handle up to lock cartridge in place.

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.

k. Ensure no obstruction, such as latching handle, prevents proper seating of gasket or closure of access door.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

l. Carefully align and close access door and hold it shut

NOTE

Loosely thread all four (4) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

m. Loosely thread four (4) captive fasteners on access door.

n. Tighten four (4) captive fasteners evenly and securely on access door.

2–10.5.2 REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (Continue)

o. Perform AN/UYK-128(V) system startup and login procedures IAW Chapter 2, Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

NOTE

Touch Screen Calibration also serves as functional check of Removable Hard Disk Drive Cartridge (RHDDC).

p. Perform Touch Screen Calibration IAW 2-7.1 of this manual if a new RHDDC has been installed in the processor unit.

q. Install lock on PU if required.

r. Install chain on the guard (HMMWV only) if required.

s. Close PU guard/kick plate (M548A3 VOLCANO only).

NOTE

If AN/UYK-128(V) computer Removable Hard Disk Drive Cartridge (RHDDC) has been replaced, platform Role/ID may be incorrect and must be reconfigured. Otherwise incoming Command and Control (C2) messages will not be able to be received. In addition, incorrectly relayed information due to wrong platform Role/ID on the vehicle's computer may adversely impact message flow between different echelons.

t. Perform Configure Platform/Role according to paragraph 2–19.

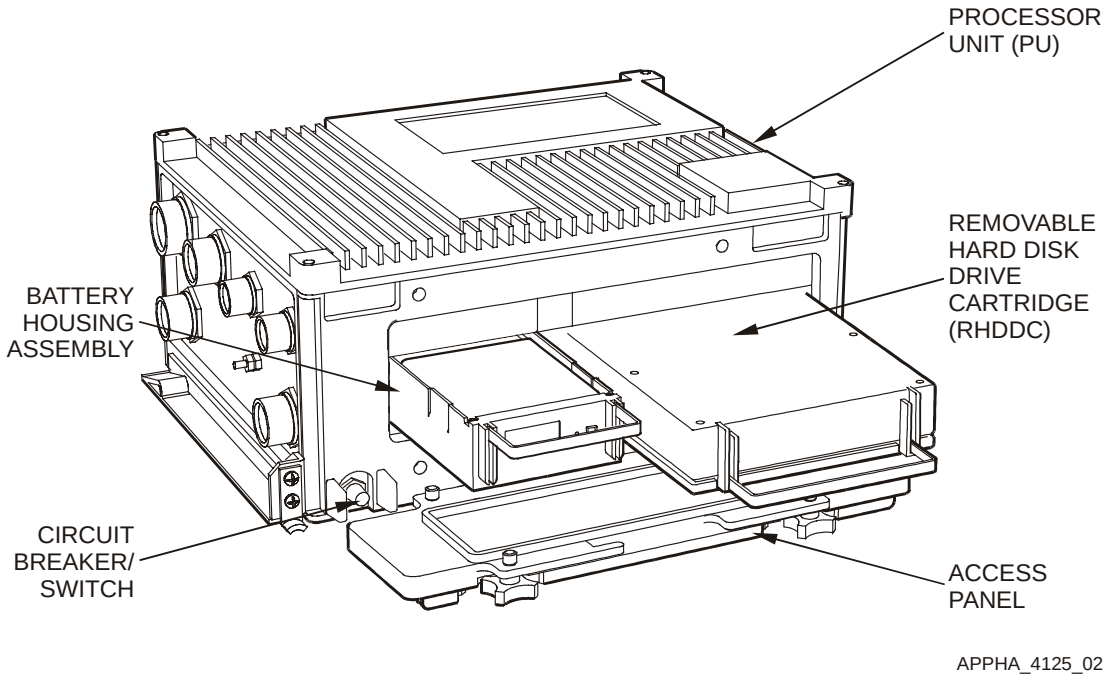

Figure 2-15. Remove/Replace RHDDC NSN 7025-01-474-3789/NSN 7025-01-487-0581 for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578

2–10.6 REMOVE/REPLACE BATTERY CARRIER ASSEMBLY

Remove/Replace Battery Carrier Assembly for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 (Refer to Figure 2-16 through Figure 2-19).

The battery carrier assembly (PN 59727-1) contains the PU backup batteries. It holds two 13.2-Volt (Nickel Metal Hydride) BB-388/U rechargeable batteries. Use the following procedures for removing and replacing the forward and rear rechargeable batteries and/or the battery carrier assembly for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579.

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

WARNING

NiMH internal hold-up batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed by water to remove electrolytes. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

If Processor Unit batteries leak, remove batteries and clean out the battery compartment with a clean water-dampened cloth, then dry thoroughly. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

CAUTION

Keep batteries away from extreme temperatures. The battery pack will not function as an Uninterruptible Power Supply (UPS) when the temperature of the battery(s) is outside the range of –20 degrees C to +55 degrees C.

NOTE

Refer to TM 11-6130-489-13&P for procedures to charge the BB-388A/U BB-388/U rechargeable battery NSN 5820-01-215-6181 NSN 6140-01-419-8190.

2–10.6.1 REMOVE BATTERY CARRIER ASSEMBLY

a. Power down AN/UYK-128(V) computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

b. Open PU guard/kick plate (M548A3 VOLCANO only).

c. Remove chain from the guard (HMMWV only) if not already accomplished.

d. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

e. Loosen six (6) captive fasteners on RHDDC access door.

f. Open RHDDC access door completely.

NOTE

The Battery Carrier Assembly in PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 is located on the interior right side. If the battery assembly is located on the left side of the PU, refer to Paragraph 2-10.7 of this manual for the proper procedure.

g. Loosen one (1) captive fastener on the battery carrier assembly that holds it in place.

h. Grasp wire handle on battery carrier assembly with fingers and pull straight outward with steady pressure until assembly unseats and clears access door.

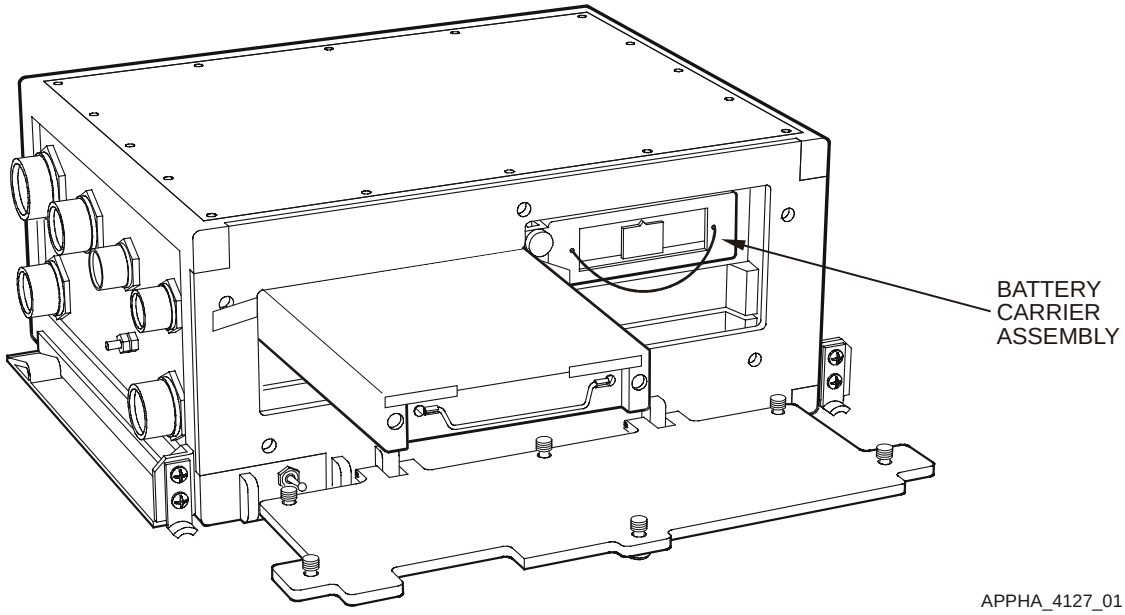

Figure 2-16. Remove/Replace Battery Carrier Assembly PN 59727-1 for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579

2–10.6.2 REMOVE BB-388/U RECHARGEABLE BATTERIES

a. Remove one (1) screw, lock washer, and flat washer on the rear of the battery carrier securing the cover plate to the printed wiring assembly using a No. 1 cross-tip screwdriver. Refer to Figure 2-17and Figure 2-18.

b. Loosen five (5) captive screws securing the top cover of the battery carrier using a No. 1 cross-tip screwdriver.

CAUTION

Ensure screw, lock washer, and flat washer have been removed from rear of battery box before removing battery carrier cover. Failure to remove screw could cause damage to printed wiring assembly on battery carrier.

c. Remove battery carrier top cover.

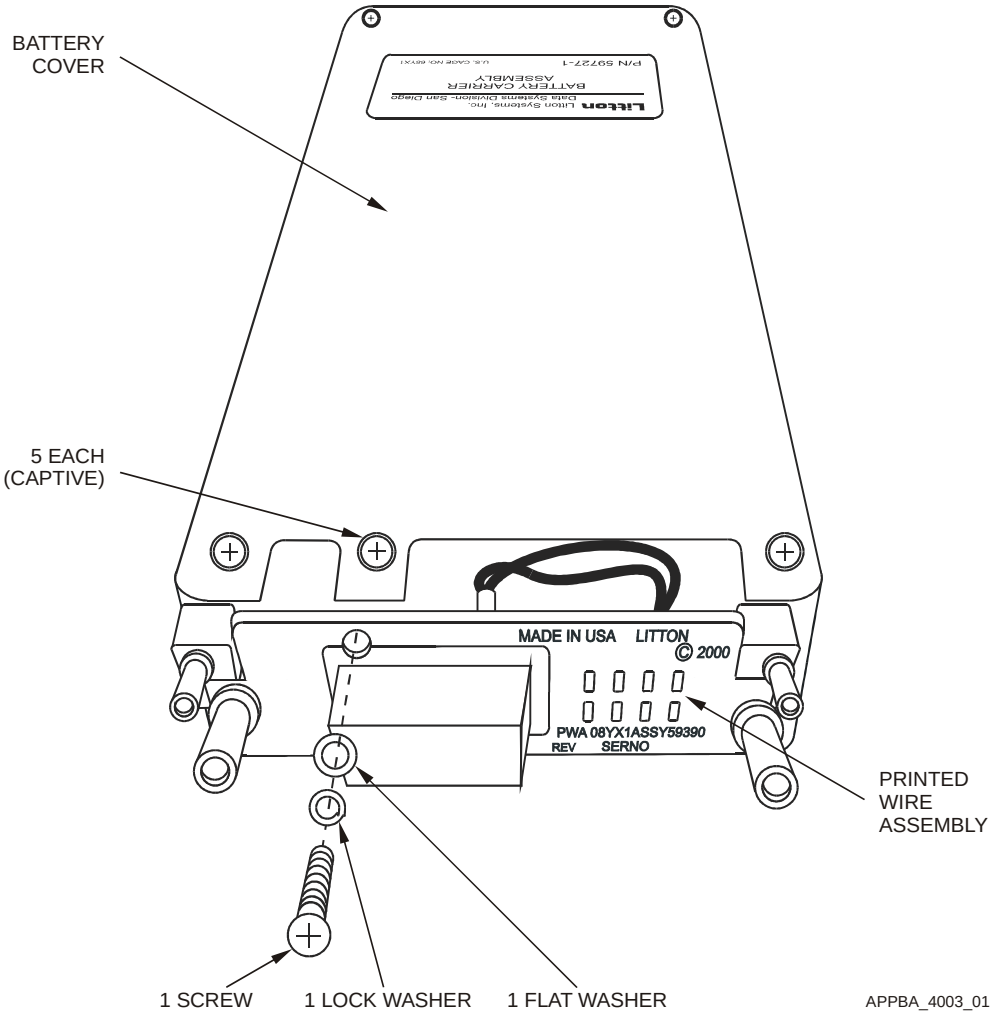

Figure 2-17. Remove and Install Battery Carrier Assembly Covers

2–10.6.2 REMOVE BB-388/U RECHARGEABLE BATTERIES (Continued)

d. Lift both middle ends of batteries from carrier assembly at same time to dislodge batteries.

e. Disconnect front and rear battery connectors and remove both BB-388/U rechargeable batteries from carrier assembly.

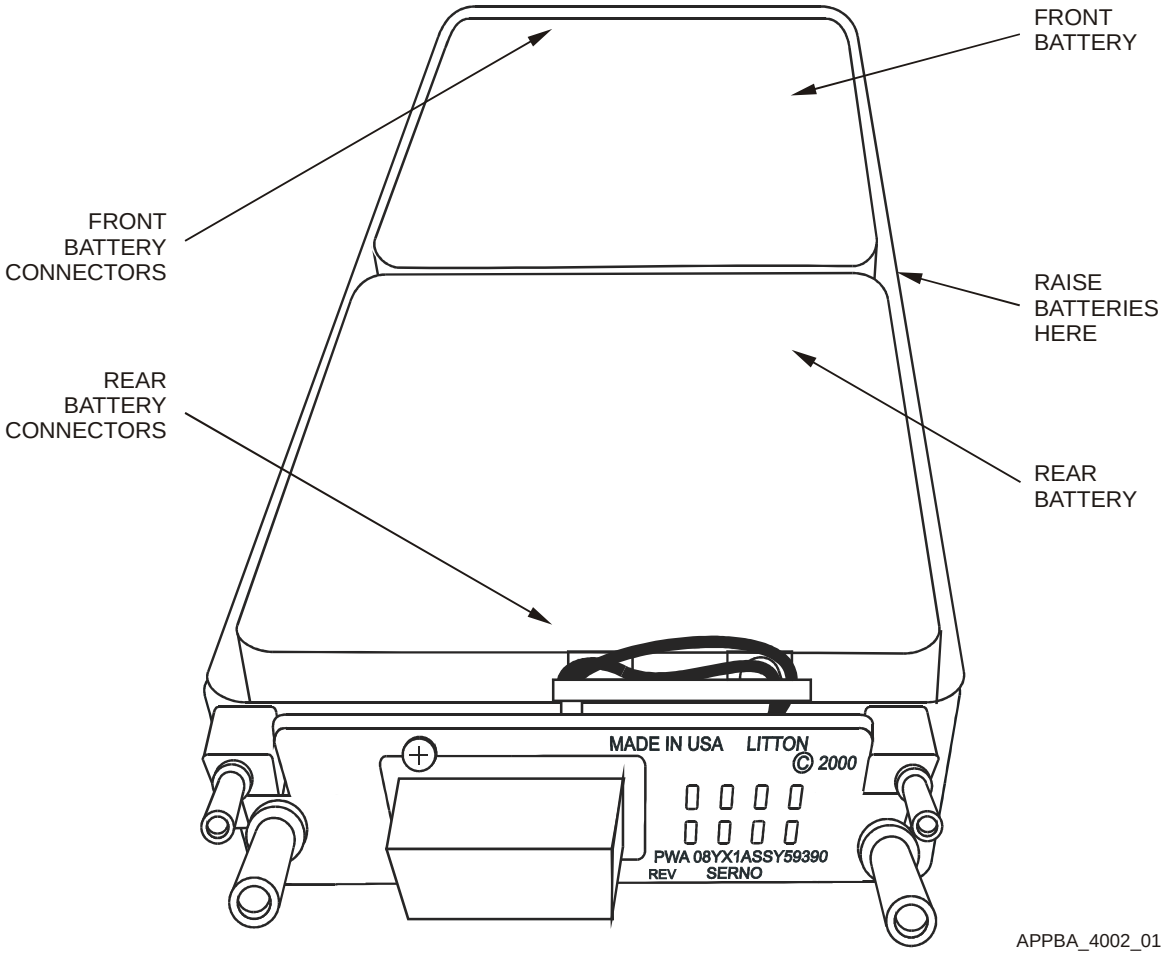

Figure 2-18. Remove BB-388/U Rechargeable Batteries

2–10.6.3 INSTALL BB-388/U RECHARGEABLE BATTERIES

(Install Rechargeable Batteries in Carrier Assembly (PN 59727-1) for PU NSN 7021-01-475-0217/ NSN 7021-01-487-0579.)

a. Observing polarity, connect replacement BB-388/U rechargeable battery to front and rear connectors in carrier assembly. (Refer to Figure 2-19.)

b. Insert batteries into carrier assembly, connector ends first and pointing outward (front and rear), while lifting the rear of both batteries. (Refer to Figure 2-19.)

c. Press batteries down, until both are flat and contacts are secure.

d. Enter date of replacement on label of each battery.

e. Place top cover over battery box and align rear screw hole on rear cover with hole on battery carrier printed wiring assembly (rear connector end of battery box). (Refer to Figure 2-19.)

f. Install one (1) screw, lock washer, and flat washer in screw hole on printed wiring assembly on rear (connector end) of battery carrier assembly using a No. 1 cross-tip screwdriver.

g. Tighten five (5) captive screws securing top cover to battery carrier assembly using a No. 1 cross-tip screwdriver.

h. Perform a functional check as in Table 2–16.

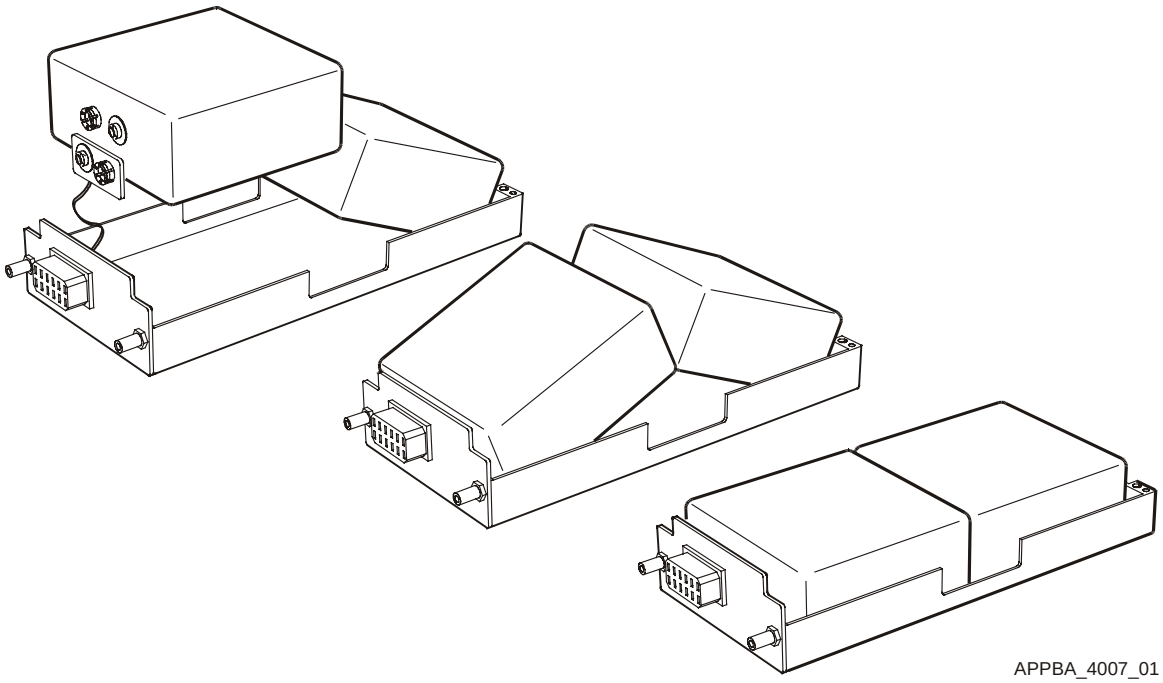

Figure 2-19. Install Rechargeable Batteries in Battery Carrier Assembly

2–10.6.4 REPLACE BATTERY CARRIER ASSEMBLY

Replace Battery Carrier Assembly (PN 59727-1) for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579.

NOTE

The Battery Carrier Assembly in PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 is located on the interior right side. If the battery assembly is located on the left side of the PU, refer to Paragraph 2-10.7 of this manual for the proper procedure.

a. Grasp battery carrier assembly wire handle with label facing upward toward top of PU.

b. Insert battery carrier assembly carefully into PU slot and slide into place while applying steady pressure until fully seated.

NOTE

Ensure both retaining latches for the Removable Hard Disk Drive Cartridge (RHDDC) and wire rope handle of Battery Carrier Assembly are fully retracted (i.e., folded back completely). Failure to comply may result in equipment damage when closing and securing the access door.

c. Thread captive fastener that holds battery pack in place and ensure it is securely tightened.

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.

d. Ensure no obstruction, such as wire handle or a retaining latch, prevents proper seating of gasket or closure of access door.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

e. Carefully align and close access door and hold it shut

2–10.6.4 REPLACE BATTERY CARRIER ASSEMBLY (Continued)

NOTE

Loosely thread all six (6) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

f. Loosely thread six (6) captive fasteners on access door.

g. Tighten six (6) captive fasteners evenly and securely on access door.

h. Perform AN/UYK-128(V) system startup and login procedures IAW Chapter 2, Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

NOTE

The Functional Check of the backup battery power requires that external power be shut down in order for PU to operate on backup power

i. Perform a functional check as in Table 2–16.

Table 2–16. BB-388/U Rechargeable Batteries Functional Check

STEP	ACTION	RESULT
1	Activate the AN/UYK-128(V) computer.	Allow normal boot-up.
2	Shut down vehicle power.	AN/UYK-128(V) computer should continue operation while DU PWR indicator turns red.
3	Restore vehicle power.	AN/UYK-128(V) computer returns to normal operation.

j. Install lock on PU if required.

k. Install chain on the guard (HMMWV only) if required.

l. Close PU guard/kick plate (M548A3 VOLCANO only).

2–10.7 REMOVE/REPLACE BATTERY HOUSING ASSEMBLY

The battery housing assembly (PN 0410-06558-0000) contains the PU backup batteries. It holds a single 13.2-volt (Nickel Metal Hydride) BB-388/U rechargeable battery (NSN 6140-01-419-8190) and one 9-volt (Lithium) non-rechargeable battery (NSN 6135-01-369-9792). Use the following procedures for removing and replacing the rechargeable and non-rechargeable batteries in the battery housing assembly for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578. Refer to Figure 2-20 through Figure 2-24.

WARNING

NiMH internal hold-up batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

Processor Units with internal Light Emitting Diodes (LED) diagnostic displays contain 9-volt non-rechargeable lithium batteries located in battery trays. Batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

If Processor Unit batteries leak, remove batteries and clean out the battery compartment with a clean water-dampened cloth, then dry thoroughly. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

CAUTION

Keep batteries away from extreme temperatures. The battery pack will not function as a holdup battery when the temperature of the battery(s) is outside the range of –20 degrees C to +55 degrees C.

NOTE

Refer to TM 11-6130-489-13&P for procedures to charge the BB-388A/U BB-388/U rechargeable battery NSN 5820-01-215-6181 NSN 6140-01-419-8190.

2–10.7.1 REMOVE BATTERY HOUSING ASSEMBLY

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

a. Power down AN/UYK-128(V) computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

b. Open PU guard/kick plate (M548A3 VOLCANO only).

c. Remove chain from the guard (HMMWV only) if not already accomplished.

d. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

e. Loosen four (4) captive fasteners on RHDDC access door.

f. Open RHDDC access door completely. Refer to Figure 2-20.

NOTE

The Battery Housing Assembly in PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 is located on the interior left side. If the battery assembly is located on the right side of the PU, refer to Paragraph 2-10.6 of this manual for the proper procedure.

NOTE

The handle of this battery housing assembly secures the rechargeable battery against the contacts when in the down position. To release battery, the handle must be raised and pointing outward. There is also a hole in the bottom of the housing to aid in removing the BB-388/U 13.2V rechargeable battery.

g. Raise battery assembly handle up 90 degrees to allow pulling battery housing assembly from PU.

h. Grasp battery assembly handle with fingers and pull straight outward with steady pressure until battery housing unseats and clears access door.

2–10.7.1 REMOVE BATTERY HOUSING ASSEMBLY (Continued)

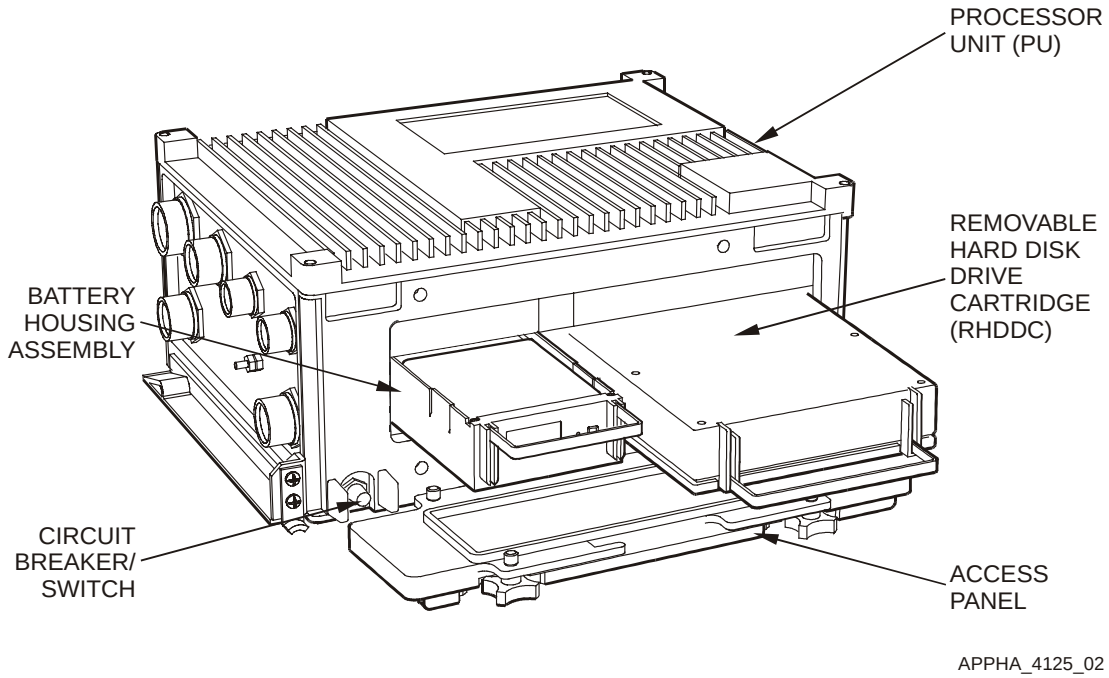

Figure 2-20. Remove/Replace Battery Housing Assembly for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578

2–10.7.2 REMOVE BB-388/U RECHARGEABLE BATTERY

a. Hold housing with both hands at the rear printed wiring assembly and push battery with thumbs toward front of assembly (handle end) to disengage BB-388/U 13.2 V rechargeable battery from connectors on the circuit card. Refer to Figure 2-21 and Figure 2-22.

b. Push 13.2 V rechargeable battery upward with finger through hole in bottom of housing to dislodge battery. (Refer to Figure 2-23)

c. Remove 13.2 V battery from housing.

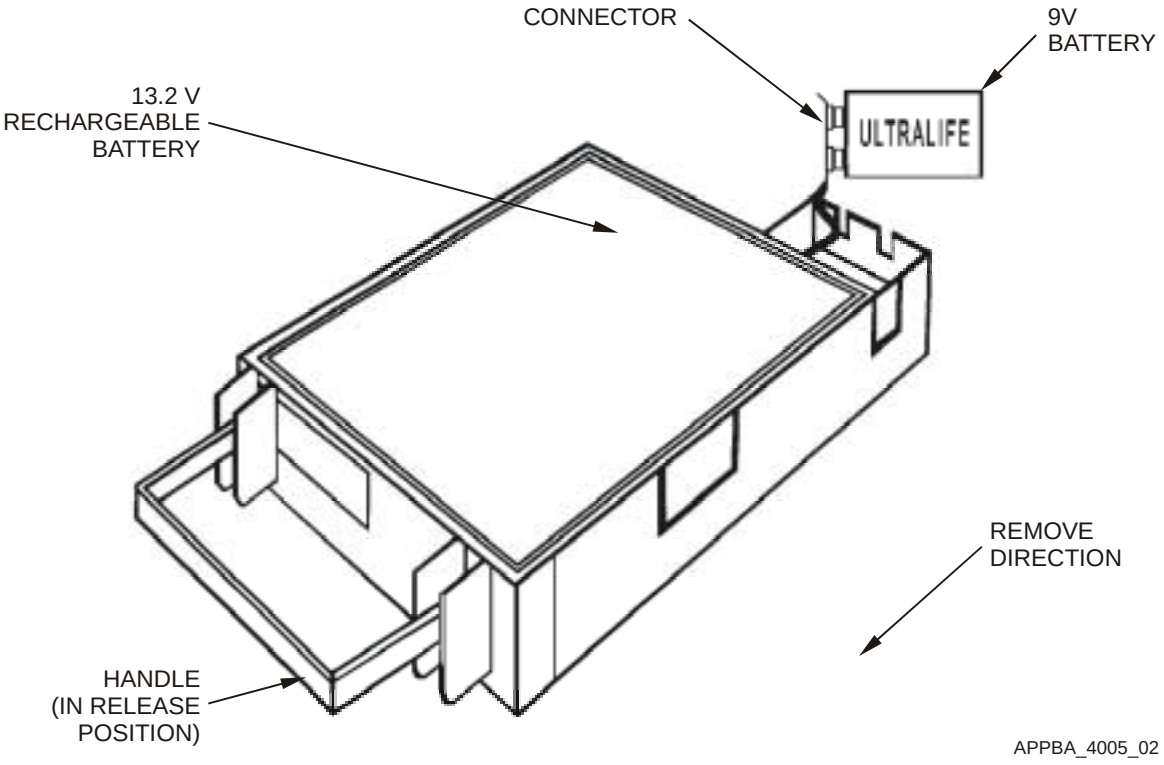

Figure 2-21. Remove and Replace Battery Housing Assembly for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578

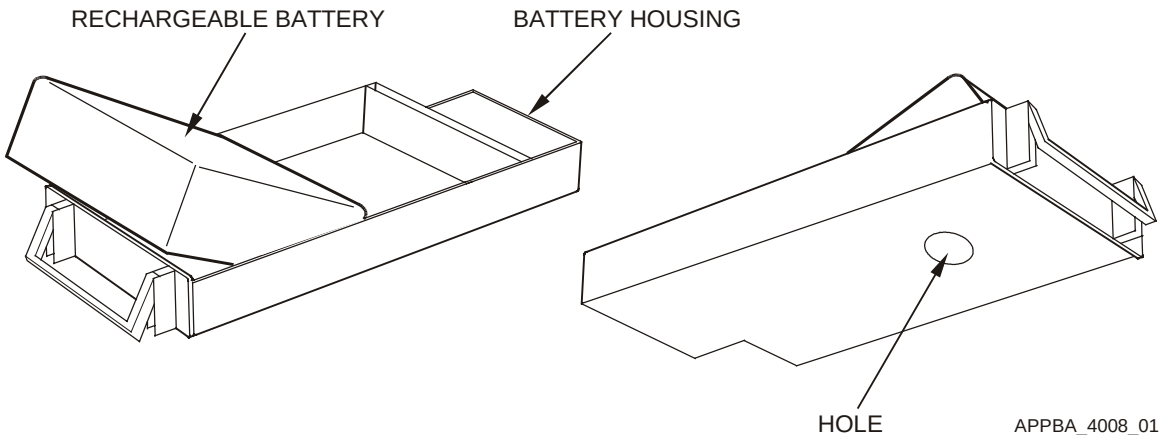

Figure 2-22. Remove Rechargeable Battery from Battery Housing Assembly

2–10.7.3 INSTALL BB-338/U RECHARGEABLE BATTERY

a. Raise battery assembly handle on front of battery housing up to the release position.

b. Observing polarity, align terminals of replacement BB-388/U 13.2 V rechargeable battery with connectors on printed wiring assembly at rear of battery housing assembly.

c. Insert 13.2V rechargeable battery into battery housing keeping battery terminals aligned to connectors. Refer to Figure 2-23.

d. Press down on bottom of 13.2V rechargeable battery and lower battery assembly handle downward to fully engage battery terminals into connectors on printed wiring assembly in housing.

e. Enter date of replacement on label of 13.2 V rechargeable battery.

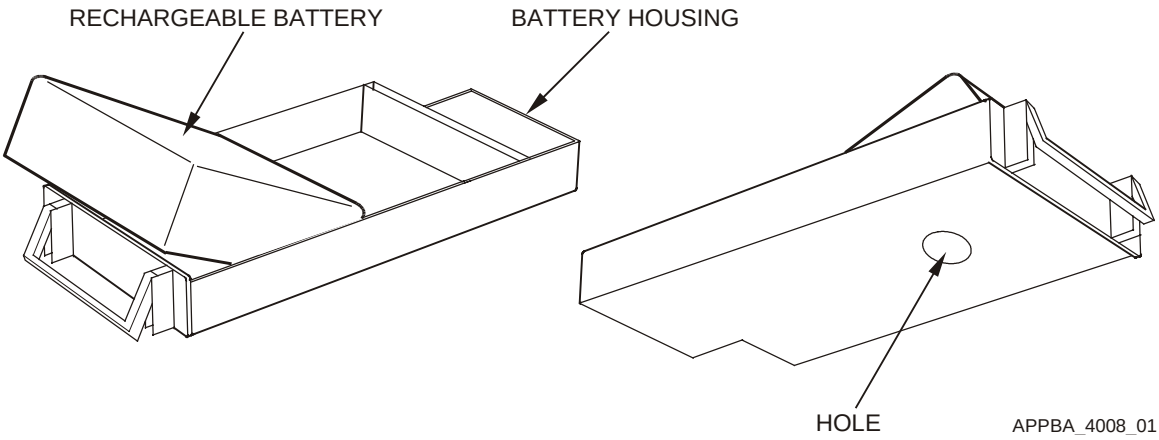

Figure 2-23. Install Rechargeable Battery in Battery Housing Assembly

2–10.7.4 REMOVE 9 VOLT LITHIUM NON-RECHARGEABLE BATTERY

a. Place hand over top of battery housing opening to support batteries in housing assembly.

b. Turn battery housing assembly upside down.

c. Remove 9V battery from its cavity to gain access to battery connector. Refer to Figure 2-24.

d. Turn battery housing assembly upright and disconnect battery connector from 9V non-rechargeable battery.

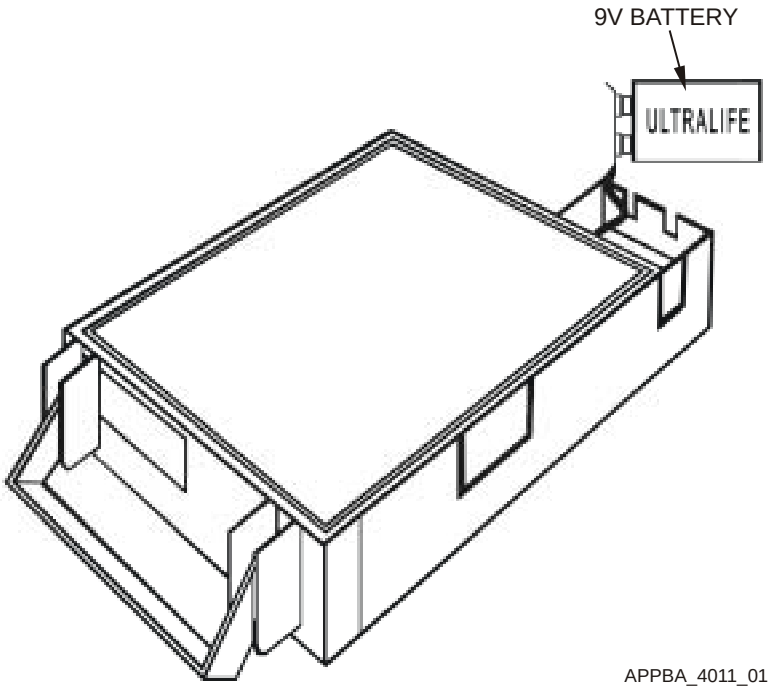

Figure 2-24. Remove and Replace Non-Rechargeable 9V Battery

2–10.7.5 REPLACE 9 VOLT LITHIUM NON-RECHARGEABLE BATTERY

a. Connect new 9V battery to connector ensuring correct polarity. Refer to Figure 2-24.

b. Insert non-rechargeable 9V battery into rear cavity of battery housing assembly with wire on connector facing down and toward middle of battery housing.

2–10.7.6 REPLACE BATTERY HOUSING ASSEMBLY

Replace Battery Housing Assembly (PN 0410-06558-0000) for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578.

a. Raise battery assembly handle up 90 degrees to the release position. Refer to Figure 2-20.

NOTE

The Battery Housing Assembly in PU NSN 7021-01-474-3793/NSN 7021-01-487-0578/NSN 7021-01-487-0578 is located on the interior left side. If the battery assembly is located on the right side of the PU, refer to Paragraph 2-10.6 of this manual for the proper procedure.

b. Grasp battery assembly handle with label facing upward toward top of PU.

c. Insert battery housing assembly carefully into PU slot and slide into place while applying steady pressure until fully seated.

d. Lower battery assembly handle and ensure battery housing is securely seated in PU.

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.

e. Ensure no obstruction, such as battery assembly handle, prevents proper seating of gasket or closure of access door.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

f. Carefully align O-ring gasket, Electro-Magnetic Impulse (EMI) shield, and close access door and hold it shut

2-10.7.6 REPLACE BATTERY HOUSING ASSEMBLY (Continued)

NOTE

Loosely thread all four (4) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

g. Loosely thread four (4) captive fasteners on access door.

h. Tighten four (4) captive fasteners evenly and securely on access door.

NOTE

The Functional Check of the backup battery power requires that external power be shut down in order for PU to operate on backup power.

i. Perform a functional check as shown in Table 2–17.

Table 2–17. 13.2V Rechargeable Battery Functional Check

STEP	ACTION	RESULT
1	Activate the AN/UYK-128(V) computer.	Allow normal boot-up.
2	Shut down vehicle power.	AN/UYK-128(V) computer should continue operation while DU PWR indicator turns red.
3	Restore vehicle power.	AN/UYK-128(V) computer returns to normal operation.

j. Install lock on PU if required.

k. Install chain on the guard (HMMWV only) if required.

l. Close PU guard/kick plate (M548A3 VOLCANO only).

2-10.7 REMOVE/REPLACE CABLES

Most cables of the same type (W1, W2, W3 SIAD, W3P, W3N, and W4) are removed and replaced the same way at the connector end. Due to various installation configurations, the routing of the cables is different from platform to platform. The removal/replacement procedures are located in a separate appendix of TB 11-7010-326-20 for each specific platform. For part numbers and additional hardware information, refer to the applicable appendix of Unit Maintenance TB 11-7010-326-20. Instructions for repairing ground straps and making new ground straps are found in paragraph 2-11.

SECTION VI. REPAIR PROCEDURES

2–11 GROUND STRAPS

2–11.1 REPAIR GROUND STRAP

If the terminal is loose or comes off one side of a ground strap, clean the exposed end with a wire brush. Use the multipurpose wire stripper/crimper to crimp a new ¼" lug (P/N 69405k58) on to the braided end.

2–11.2 MANUFACTURE GROUND STRAP

If the ground strap is damaged or broken make a new ground strap as follows:

a. Measure the braided cable (P/N 123-2, NSN 6145-00-729-9648) and cut it to the required length.

b. Use the multipurpose wire stripper/crimper (P/N 7007K92) to crimp a new ¼" (P/N 69405K58) lug on to each of the braided ends.

2–12 CLEAR THE INTERNET CONTROLLER (INC) [ROUTER]

2–12.1 CLEAR INC FROM THE SINCGARS

NOTE

It may be necessary to repeat the clearing procedure 3 or 4 times to clear the INC. Perform this operation according to Table 2–18.

Table 2–18. Clear INC (Router) from the SINCGARS

NO.	OPERATOR ACTION	INDICATION OR CONDITION
1	Rotate SINCGARS ASIP R/T Radio Function (FCTN) switch to LD position.	FCTN switch position set to LD.
2	Press the 2 button	Radio Displays RT
3	Press the 7 button until radio displays LDE.	Radio displays: LDE then LDE-N **NOTE** If the Receiver/Transmitter (R/T displays NEWIP after LDE-N, press STO button.
4	Press the 1 button	Radio displays 1
5	Press the STO button.	Radio display: DEFLT Then RT.
6	Rotate radio function switch to ON position.	R/T on SINCGARS ASIP radio has FCTN switch position set to ON.
7	Reinitialize AN/UYK-128(V) computer	Communication status goes green, problem solved. If Communication status is red or amber, troubleshoot AN/UYK-128(V),

2–12.2 CLEAR INC FROM AN/UYK-128(V) (FBCB2 SOFTWARE)

Access from: "Session Manager" [Start] "FBCB2" "SysAdmin…" The [Clear Router] button is used to clear the INC. The INC must then be reloaded. Refer to Table 2–19 for procedure to Clear the INC (Router). Refer to Table 2–20 for procedure to reload the INC (Router).

Table 2–19. Clear INC (Router) from AN/UYK-128(V)

NO.	USER ACTION	SYSTEM REACTION
From the Task Bar while Offline (but after Login):		
1	Select the [Start] button.	The Start option menu is displayed.
2	Select the “FBCB2” menu option.	The “FBCB2” option menu is displayed.
3	Select the “SysAdmin…” option.	The “System Administration Dialog” box is displayed.
4	Select the “Select User Name:” [Down Arrow] button. Select an option.	System displays the “Select User Name” option list. System displays selected option in the “Select User Name:” text box.
5	Select the “Enter Password:” text box. Enter the password.	System displays the cursor in the “Enter Password:” text box. System displays asterisks in the “Password” text box.
6	Select the [Continue] button.	System displays the “System Administration” dialog box.
7	Select the “Miscellaneous” tab if not already selected.	System displays the “Miscellaneous” tab group.
8	Select the [Comm Tools] button.	System displays the “Comm Tools” dialog box.
9	Select the [Clear Router] button.	System displays dialog box and query, “Which router do you want to clear?”
TO CLEAR ROUTER 1:		
10	Select the [Router 1] option button.	System black-fills the option button.
11	Select the [Continue] button.	System displays the "Clear Router" pane. When completed "Press ENTER to continue" message is displayed in pane.
12	Select the "Enter" key.	System displays the "Comm Tools" dialog box.
13	Proceed to Table 2–20 to reload router.	
TO CLEAR ROUTER 2:		
14	Select the [Router 2] option button.	System black-fills the option button.
15	Select the [Continue] button.	System displays the "Clear Router" pane. When completed "Press ENTER to continue" message is displayed in pane.
16	Select the "Enter" key.	System displays the "Comm Tools" dialog box.
17	Proceed to Table 2–20 to reload router.	

Table 2–19. Clear INC (Router) from AN/UYK-128(V)

NO.	USER ACTION	SYSTEM REACTION
TO CLEAR BOTH ROUTER 1 AND 2:		
18	Select the [Router 1 and 2] option button.	System black-fills the option button.
19	Select the [Continue] button.	System displays the "Clear Router" pane. When completed "Press ENTER to continue" message is displayed in pane.
20	Select the "Enter" key.	System displays the "Comm Tools" dialog box.
21	Proceed to Table 2–20 to reload router.	

Table 2–20. Reload INC (Router)

NO.	USER ACTION	SYSTEM REACTION
1	Select the [Reload Router] button.	The system displays the dialog box and the query "How do you want to load the router?"
TO RELOAD ROUTER FROM THE DATABASE:		
2	Select the “From the database” radio button.	The system black-fills the radio button.
3	Select the [Continue] button.	The system displays the "Reload Router" pane. When completed "Press ENTER to continue" message is displayed in pane.
4	Select the "Enter" key.	The system displays the "Comm Tools" dialog box.
5	Proceed to step 11	
TO RELOAD ROUTER FROM A MIB LOG FILE:		
6	Select the “From a MIB log file” option button.	The system black-fills the radio button.
7	Select the “Select a File” text box.	The system displays the cursor in the “Select a File” text box.
8	Enter a filename path.	The system displays the filename path in the “Select a File” text box.
9	Select the [Continue] button.	The system displays the "Reload Router" pane. When completed "Press ENTER to continue" message is displayed in pane.
10	Select the "Enter" key.	The system displays the "Comm Tools" dialog box.
11	Select the [Done] button.	“Comm Tools” dialog box closes.
12	Select the [Cancel] button.	“System Administration” dialog box closes.

2–13 RESETTING THE HARD DISK (MAKE MASTER)

If the RHDDC seems to be at fault and a replacement is not available, the RHDDC may be reset to it's default condition. This may cause the loss of message data and role information.

a. Clear the INC. (Refer to paragraph 2–12.)

b. Select the following in order: Start, FBCB2, SystAdmin…option.

c. In System Administration dialog box, using Select User Name down arrow, select fbcadmin.

d. Enter password and select Continue button.

e. Select Configure System tab.

f. Select the Return to Master button.

g. Answer "y" to "Are you sure you want to make Master of this system?" and press Enter key.

h. Allow system to continue building files until the message, "Return To Master Processing Successful" appears.

i. Any failures during this process will require that the RHDDC be changed.

j. Press ENTER to continue, input role per paragraph 2–19.

2–14 BIOS REPAIRS FOR NSN 7021-01-475-0217/NSN 7021-01-487-0579

2–14.1 DURING THE BOOT PROCESS RAM COUNT

a. Enter the Basic Input/Output System (BIOS) by pressing the F2 key. Press the F9 key and load the default settings.

b. Arrow down to Floppy disk A drive, using the minus key select disable.

c. Press F10, to save the configuration, and exit the BIOS.

d. While the software is rebooting the RAM count will continue to count to 191MB. Let the software boot to the screen that states "Initializing System Please Wait". Turn off the AN/UYK-128(V) PU at the circuit breaker switch.

e. Wait 10 seconds and reboot the AN/UYK-128(V) to the BIOS. (Please Note that the RAM counts should not be seen counting at this time.)

f. Arrow down to the Floppy disks A drive and using the minus key select the 1.44/1.25MB drive.

g. Press F10 to save the configuration.

h. Select the Yes button in the dialog window to reboot the AN/UYK-128(V) computer.

2–14.2 WHEN THE AN/UYK-128(V) WILL NOT RECOGNIZE THE HARD DRIVE AND DISPLAYS "NON SYSTEM DISK. REPLACE AND PRESS ANY KEY TO CONTINUE."

NOTE

An exclamation mark (!) next to the device means the device is disabled. Pressing the shift and + keys simultaneously will remove the !.

a. Reboot the AN/UYK-128(V) and enter the BIOS by pressing the F2 key. Press the F9 key and load the default settings.

2–14.2 WHEN THE AN/UYK-128(V) WILL NOT RECOGNIZE THE HARD DRIVE AND DISPLAYS "NON SYSTEM DISK. REPLACE AND PRESS ANY KEY TO CONTINUE." (Continued)

b. Look at the Primary Master and note the size of the hard drive. If the hard drive is recognized, then arrow over the BOOT menu, then arrow down, highlight the hard drive, and press the enter key.

c. If you see the Boot add-in card on top of the IBM drive, you will need to change the boot sequence to IBM on top of the Boot add-in card. To do this, arrow down to the IBM drive, press the shift, and plus keys simultaneously. This will switch the boot sequence.

d. Press F10 and save the configuration. Then reboot the AN/UYK-128(V).

e. Problem not solved, replace RHDDC and recheck BIOS.

f. Problem solved. If not, replace PU.

2–15 BIOS REPAIRS FOR NSN 7021-01-474-3793/NSN 7021-01-487-0578

2–15.1 WHEN AN/UYK-128(V) BOOTS TO WINDOWS DIAGNOSTIC SCREEN

NOTE

An exclamation mark (!) next to the device means the device is disabled. Pressing the shift and + keys simultaneously will remove the !.

a. Reboot the AN/UYK-128(V) and enter the BIOS by pressing the F2 key. Press the F9 key and load the default settings.

b. Look at the Primary Master and note if you can see the size of the hard drive. If the hard drive is recognized, then arrow over the BOOT menu, then arrow down, highlight the hard drive, and press the enter key.

c. If you see the Boot add-in card on top of the IBM drive, you will need to change the boot sequence to IBM on top of the Boot add-in card. To do this arrow down to the IBM drive, press the shift and plus keys simultaneously. This will switch the boot sequence.

d. Press F10 to save the configuration.

e. Select the Yes button in the dialog window to reboot the AN/UYK-128(V) computer.

f. Problem not solved, replace RHDDC and recheck BIOS.

g. Problem solved. If not, replace PU.

2–15.2 WHEN RAM COUNT IS VISIBLE DURING THE BOOT PROCESS

a. Enter the BIOS by pressing the F2 key. Press the F9 key and load the default settings.

b. Press F10, save the configuration, and exit the BIOS.

c. While the software is rebooting the RAM count will continue to count to 191MB. Let the software boot to the screen that states "Initializing System Please Wait". Turn off the AN/UYK-128(V) PU at the circuit breaker switch.

d. Wait 10 seconds and reboot the AN/UYK-128(V) to the BIOS. (Please Note that the RAM counts should not be seen counting at this time.)

2–16 CONFIGURING BIOS FROM STANDARD CONFIGURED AN/UYK-128(V) TO BRADLEY HEADLESS SYSTEM FOR PU NSN 7021-01-475-0217/NSN 7021-01-487-0579

Following procedure is used for converting the BIOS settings from a standard configured AN/UYK-128(V) computer system to BIOS settings for use in a Bradley headless system.

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit is powered up. Failure to comply can cause equipment damage.

CAUTION

Not all RHDDC models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant technical manuals to determine compatibility with Processor Unit (PU). Failure to comply with caution could result in system damage.

NOTE

The headless software cannot be booted in a standalone system.

a. Insert the RHDDC into the PU and perform AN/UYK-128(V) computer start up.

b. Press F2 key to enter the setup screen.

c. Disable the 3 1\2 floppy drive on the Main menu by scrolling down to the Legacy Diskette A: and using the minus key, press it until the Legacy Diskette A: displays Disabled**.**

d. Scroll to the Boot menu using the arrow keys. Using the arrow key(s) scroll down until Removable Devices is highlighted and press the Enter key.

e. Scroll down to the Legacy Floppy Drives and press the Sift and ! keys simultaneously to disable the floppy drive (this will place an exclamation mark (!) next to the device that is being disabled) Scroll back up to the Removable Devices and press the Shift and ! keys simultaneously again (this will place an exclamation mark (!) next to the Removable Devices).

f. Using the arrow keys, scroll down to the ATAPI CD-ROM Drive and press the Shift and ! keys simultaneously to disable the ATAPI CD-ROM Drive (this will place an exclamation mark (!) next to the device that is being disabled).

g. Scroll back up to the Hard Drive and press the Shift and + keys simultaneously to place the Hard Drive on the top of the Boot menu.

h. Press the F10 key to save BIOS settings.

i. Select the Yes button in the Setup Confirmation dialog box and press the Enter key to reboot the AN/UYK-128(V) computer.

j. Power the PU OFF.

2–17 CONFIGURING BIOS FROM BRADLEY HEADLESS SYSTEM TO STANDARD CONFIGURED AN/UYK-128(V) FOR PU NSN 7021-01-475-0217/NSN 7021-01-487-0579

Following procedure is used for converting the BIOS settings from a Bradley headless system to BIOS settings used in the standard configured AN/UYK-128(V) computer system.

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit is powered up. Failure to comply can cause equipment damage.

CAUTION

Not all RHDDC models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant technical manuals to determine compatibility with Processor Unit (PU). Failure to comply with caution could result in system damage.

NOTE

The headless software cannot booted in a standalone system.

a. Insert the RHDDC into the PU and perform AN/UYK-128(V) computer start up.

b. Press F2 to enter the setup screen.

c. Enable the 3 1\2” floppy drive on the Main menu by scrolling down to the Legacy Diskette A:, then press the – key until the Legacy Diskette A: drive displays: 1.44/1.25 MB 3 1/2 “.

d. Scroll to the Removable Devices and press the Shift and ! keys simultaneously (this will remove the exclamation mark (!) next to the Removable Devices).

e. Scroll down to the ATAPI CD-ROM and press the Shift and ! keys simultaneously to enable the ATAPI CD-ROM (this will remove the exclamation mark (!) next to the ATAPI CD-ROM).

f. Scroll back up to the Hard drives and press the Shift and + keys simultaneously to place the Removable Devices on the top of the boot menu.

g. Press the F10 key to save BIOS settings.

h. Select the Yes button in the Setup Confirmation dialog box and press the Enter key to save configuration changes and reboot the AN/UYK-128(V) computer.

i. During reboot, press the F2 key to reenter the setup screen.

j. Scroll over to the Boot menu. Scroll down to Removable Devices and press the Enter key. Scroll down to the Legacy Floppy Drives and press the Shift and ! keys simultaneously to enable the floppy drive (this will remove the exclamation mark (!) next to Legacy Floppy Drives).

k. Press the F10 key to save BIOS settings.

l. Select the Yes button in the Setup Confirmation dialog box and press the Enter key to reboot the AN/UYK-128(V) computer.

m. Power the PU OFF.

2–18 CLEAR LOGS AND QUEUES

The “Clear Logs and Queues” function allows the user to delete queues, playback logs, user folder entries and Situational Awareness (SA) data from the system memory. Table 2–21 below lists the procedures.

Table 2–21. Clear Logs and Queues

STEP	OPERATOR ACTION	INDICATION OR CONDITION
From the Task Bar while Offline (but after Login):		
1	Select the [Start] button.	The “Start” option menu is displayed.
2	Select the “FBCB2” menu option.	The “FBCB2” option menu is displayed.
3	Select the “Clear Logs and Queues…” option.	The “Clear Logs and Queues” dialog box is displayed.
4	Under “Select Items to Clear”, select options by selecting check box(s) next to the item(s) you want to clear.	The selected item(s) are shown with a check mark displayed in their corresponding check box(s).
5	Select the [Apply] button to clear the selected options.	The “Clear Logs and Queues Status” dialog box is displayed.
6	Select the [Close] button when the following message is displayed: “COMPLETED CLEAR LOGS & QUEUES OPERATION.”	The “Clear Logs and Queues Status” dialog box closes.
7	Select the [Close] button.	The “Clear Logs and Queues” dialog box closes.

2–19 CONFIGURE ROLE

Access from: "Session Manager" [Start] "FBCB2" "Configure Role." The “Configure Role” option allows the user to change Role/ID and reconfigure the system to a new Role/ID according to the steps in Table 2–22.

Table 2–22. Configure Role

NO.	USER ACTION	SYSTEM REACTION
From the Task Bar while Offline (but after Login):		
1	Select the [Start] button.	The Start option menu is displayed.
2	Select the “FBCB2” menu option.	The “FBCB2” option menu is displayed.
3	Select the “Configure Role…” option.	Configure Role dialog box is displayed.
4	Select the “Division:” [Down Arrow] button. Select an option from the list.	System displays the Division option list. System displays the selection in the “Division:” text box.
5	Select the “Brigade:” [Down Arrow] button. Select an option from the list.	System displays the Brigade option list. System displays the selection in the “Brigade:” text box.
6	Select the “Battalion:” [Down Arrow] button. Select an option from the list.	System displays the Battalion option list. System displays the selection in the “Battalion:” text box.
7	Select the “Company:” [Down Arrow] button. Select an option from the list.	System displays the Company option list. System displays the selection in the “Company:” text box.
8	Select the “Platoon:” [Down Arrow] button. Select an option from the list.	System displays the Platoon option list. System displays the selection in the “Platoon:” text box.
9	Select an option from the “Matching Roles:” option list (if applicable).	System highlights the selection.
10	Select the [Configure…] button.	System displays the “Verification” dialog box.
11	Select the [Yes] button on the “Verification” dialog box.	“Verification” dialog box closes. System configures the Role/ID and displays the “Role Configuration Progress” dialog box.
12	Select the [Reboot] button.	System reboots.

2–20 MISSION DATA DOWNLOAD/UPLOAD

This section consists of procedures for downloading mission data to the MDL and uploading the mission data to a AN/UYK-128(V) Computer. The MDL MUST be connected to the AN/UYK-128(V) Processor Unit or TOUGHBOOK prior to reboot or Startup. Connect the MDL to the AN/UYK-128(V) Display Unit after login with the Session Manager screen displayed. Refer to paragraph 1-21.5 for connecting the MDL to a computer.

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

NOTE

When connecting the MDL to the AN/UYK-128(V) DU, the system must be powered up and at the Session Manager screen.

2–20.1 MISSION DATA DOWNLOAD

Table 2–23 provides the procedure for downloading the mission data to the MDL from an AN-UYK-128(V) Computer or TOUGHBOOK Computer.

Table 2–23. Mission Data Download

STEP	OPERATOR ACTION	INDICATION OR CONDITION
1	From the Session Manager screen select the **Start** button.	The **Start** option menu is displayed.
2	Select the **FBCB2** option.	The **FBCB2** option menu is displayed.
3	Select the **Mission Data Load** option.	The **Mission Data Load** option menu is displayed.
4	Select the **Create MDL** option.	The **Mission Data Create** dialog box is displayed.
5	Select a data file from the **Available Data Files:** pane.	The selected file name is highlighted.
6	Select a folder name from the **Current Missions:** pane.	The selected folder name is highlighted.
7	Select the **Add Data File** button.	The data file is copied to the **Current Missions:** pane.
8	Select the **Write Mission to MDL…** button.	The **Write Mission** dialog box is displayed.
9	Select the down arrow.	System displays the option list.
10	Select an option, Portable Media or Local Drive.	If the Portable Media option is selected; the system displays the **Media Check** dialog box. If Local Drive option is selected; the option list closes and the selected option is displayed in the text box.
11	If Portable Media option was selected; select the **Yes** button.	The **Media Check** dialog box closes.

Table 2–23. Mission Data Download (Continued)

STEP	OPERATOR ACTION	INDICATION OR CONDITION
12	Select the **OK** button.	The **Write Mission** dialog box is displayed with successful status.
13	Select the **OK** button.	The **Write Mission** dialog box closes.

2–20.2 MISSION DATA UPLOAD

Table 2–24 provides the procedure for loading the mission data to an AN/UYK-128(V) Computer or TOUGHBOOK Computer from the MDL.

Table 2–24. Mission Data Upload

STEP	OPERATOR ACTION	INDICATION OR CONDITION
1	From the Session Manager screen select the **Start** button.	The **Start** option menu is displayed.
2	Select the **FBCB2** option.	The **FBCB2** option menu is displayed.
3	Select the **Mission Data Load** option.	The **Mission Data Load** option menu is displayed.
4	Select the **Install MDL** option.	The **Mission Data Extractor/Installer** dialog box is displayed.
5	Select the **Media** down arrow.	System displays the **Media** option list.
6	Select an option.	Option list closes and the selected option is displayed in the **Media** text box.
7	Select a folder name from the **Missions on MDL:** pane.	The selected folder name is highlighted.
8	Select a folder name from the **Mission Extracted:** pane.	The selected folder name is highlighted.
9	Select the **Extract** button.	The system will copy the selected file from the **Missions on MDL:** pane to the **Mission Extracted:** pane and display the **Extract Successful!** Dialog box.
10	Select the **OK** button.	The **Extract Successful!** dialog box closes.
11	Select the **Install** button.	The system will display the **Install?** confirmation dialog box.
12	Select the **Yes** button.	The **Install?** dialog box closes and the system displays the **Install Complete!** dialog box.
13	Select the **OK** button.	The **Install Complete!** dialog box closes.
14	Select the **Close** button.	The **Mission Data Extract/Installer** dialog box closes.

SECTION VII. PREPARATION FOR STORAGE OR SHIPMENT

2–21 STORAGE

The storage temperature range shall not exceed:

Ground level -60°F (-51.11°C) to +155°F (+68.33°C)

40,000 feet (12.2km) -60°F (-51.11°C) to +185°F (+85°C)

2–22 SHIPMENT

Packaging for shipment shall be in accordance with best commercial practice and in accordance with the American Society for Testing Materials (ASTM) Standard Practice for Commercial Packaging D3951-90.

APPENDIX A

REFERENCES

A–1 SCOPE

This appendix list all forms, field manuals, technical manuals, and miscellaneous publication references in this manual.

A–2 FORMS

AR 735-11-2(JAR)	Reporting of Item and Packaging Discrepancies
ASTM-D3951-90	Packaging, Commercial
DA Form 2028	Recommended Changes to Publications and Blank Forms.
DA Form 2028-2	Recommended Changes to Equipment Technical Publications.
DA2407	Maintenance Request Form

A–3 FIELD MANUALS

FM 21-11	First Aid For Soldiers

A–4 TECHNICAL MANUALS

DA PAM 25-30	Consolidated Index of Army Publications and Blank Forms
DA PAM 738-750	The Army Maintenance Measurement System (TAMMS)
MIL-STD-188/220A	Interoperability Standard For Digital Message Transfer Device Subsystems
MIL-STD-1275A(2)	Electrical Circuit, 28 Volts DC Transient Characteristics For Military Vehicles
TM 5-2350-262-20-1	Unit Maintenance Manual, Armored Combat Earthmover (ACE), M9, (2350-00-808-7100)
TM 9-2320-280-20	Technical Manual Unit Maintenance, HMMWV
TM 11-6130-489-13&P	Technical Manual Operator's, Unit, And Direct Support Maintenance Manual (Including Repair Parts And Special Tools List) Battery Charger PP-8444/U (NSN 6130-01-427-9604) and Battery Charger PP-8444A/U (NSN 6130-01-443-0970)
TM 11-7010-326-10	Force XXI Battle Command Brigade-and-Below Operator's Manual

A–4 TECHNICAL MANUALS (Continued)

TB 11-7010-326-10	Pocket Guide For AN/UYK-128(V) computer with EPLRS, PLGR, and SINCGARS/INC
TM 11-5825-291-13	Satellite Signals Navigation Set AN/PSN-11 (PLGR)
TM 43-0158 (Army)	Care And Handling of Electronic Equipment
TM 11-5820-890-10-1	Operator's Manual for SINCGARS Ground Combat Net Radio ICOM
TM11-5825-283-10	Operator's Manual for Enhanced Position Location Reporting System (EPLRS)
MIL-F-7179	Corrosion Prevention and Control (CPC)
MIL-C-46168	Chemical Agent Resistant Coatings (CARC)

A–5 MISCELLANEOUS PUBLICATIONS

TB 385-4 (Army)	Safety Precautions During The Maintenance of Electrical/ Electronic Equipment
DOD-STD-1686	ESDS Device Handling Procedures
D3951-90	American Society for Testing Materials (ASTM) Standard Practice for Commercial Packaging

APPENDIX B

MAINTENANCE ALLOCATION CHART (MAC)

SECTION I. INTRODUCTION

B–1 THE ARMY MAINTENANCE SYSTEM MAC

a. This introduction (Section I) provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Unit - contains two sub-columns, C (Operator/crew) and O (unit) maintenance.

Direct Support - contains an F sub-column

Depot Maintenance – contains a D sub-column

General/Intermediate Support Maintenance – contains an H sub-column

c. Section III lists the tools, test equipment (both special tools and common tool sets) and support equipment required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B–2 MAINTENANCE FUNCTIONS ARE LIMITED TO AND DEFINED AS FOLLOWS:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (i.e., by sight, sound, or touch).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition; i.e., to clean (include decontaminate, when required), to preserve, to drain, or to paint.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

B–2 MAINTENANCE FUNCTIONS ARE LIMITED TO AND DEFINED AS FOLLOWS (Continued):

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacement, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the 3d position code of the Source Maintenance and Recoverability (SMR) code.

i. Repair. The application of maintenance services[1] including fault location/troubleshooting[2], removal/installation and disassembly/assembly[3] procedures, and maintenance actions[4] to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

B–3 EXPLANATION OF COLUMNS IN THE MAC, SECTION II

a. Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2.

d. Column 4, Maintenance Level. Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as work hours in whole hours or decimals) in the appropriate sub-column. This work-time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work-time figures are to be shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time consists of preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart.

The symbol designations for the various maintenance levels are as follows:

C ..... Operator or crew maintenance
O ..... Unit/Organizational maintenance
F ..... Direct/Intermediate support maintenance
D ..... Depot maintenance
H ..... General/Intermediate support maintenance (Not applicable to this issue)

B–3 EXPLANATION OF COLUMNS IN THE MAC, SECTION II (Continued)

e. Column 5, Tools and Equipment reference code. Column 5 specifies, by code, those common tool sets (not individual tools), common TMDE, and special tools, special Test, Measurement, and Diagnostic Equipment (TMDE), and special support equipment required to perform the designated function. Codes are keyed to tools and test equipment in section III.

f. Column 6, Remarks. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks contained in Section IV.

B–4 EXPLANATION OF COLUMNS IN TOOLS AND EQUIPMENT REQUIREMENTS, SECTION III

a. Column 1, Reference Code. The tools and equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or equipment.

c. Column 3, Nomenclature. Name or identification of the tool or equipment.

d. Column 4, National Stock Number. The National Stock Number of the tool or equipment.

e. Column 5, Tool Number. The part or model number of the tool or equipment.

B–5 EXPLANATION OF COLUMNS IN REMARKS, SECTION IV

a. Column 1, Remarks Code. The code recorded in column 6, Section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

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[1]Services - Inspect, test, service, adjust, align, calibrate, and/or replace.

[2]Fault location/troubleshooting - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

[3]Disassembly/assembly - The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

[4]Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

SECTION II. MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) MAINTENANCE LEVEL					(5) Tools and Equipment	(6) Remarks Code
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
00	Computer Set, Digital AN/UYK-128(V)1 & (V)2 (FBCB2)	Inspect Test Repair	.10	 .25 .50				 2	 A B
01	Computer, Digital (Processor Unit - PU)	Inspect Test Repair Replace Repair	.10	 .50 .30 .73			 X	 1	 A C D E
0101	Tray, Battery Holder	Inspect Repair Replace Repair	.10	 .20 .10			 X	 1	 C B E
02	Hard Disk Drive (Removable Hard Disk Drive - RHDD)	Inspect Test Replace Repair Repair	.10	 .25 .12	 .50		 X		 A D F E
03	Display Unit (Display Unit - DU)	Inspect Test Repair Replace Repair	.10	 .25 .25 .33			 X	 1 1	 A G D E
04	Keyboard, Data Entry (Keyboard Unit - KU)	Inspect Test Replace Repair	.10	 .25 .23			 X	 1	 A D E

SECTION III. TOOLS AND EQUIPMENT

TOOLS AND EQUIPMENT REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O	Tool Kit, Electronic Equipment TK-101/G	5180-00-064-5178	TK101GISSUE6
2	O	Multimeter AN/PSM-45A (DVM)	6625-01-265-6000	AN/PSM-45A

SECTION IV. REMARKS

REMARKS CODE	REMARKS
A	Test signals/systems using Built-In-Test (BIT) and diagnostic equipment as per Section IV troubleshooting.
B	Repair by removing and replacing LRUs as discussed in Section V. A warranty is provided with all LRUs. Any LRUs requiring repair beyond DS level are to be evacuated to the contractor as per the Warranty TB.
C	Repair by replacing battery BB-388/U. Any LRUs requiring repair beyond Unit maintenance are to be evacuated to the supporting Direct Support facility.
D	Replace as per Section V and evacuate to supporting Direct Support facility.
E	A warranty is provided with all LRUs. Any LRUs requiring repair beyond Direct Support maintenance are to be evacuated to the contractor as per the Warranty Bulletin.
F	Repair by loading software as per Chapter 2, section III of TM 11-7010-326-30
G	Repair by replacing Stylus and Tether. Any LRUs requiring repair beyond Unit maintenance are to be evacuated to the supporting Direct Support facility.
H	Test by performing continuity checks using the cable wiring diagrams from Section IV.

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APPENDIX C

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

C–1 SCOPE

This listing is for information purposes only. It does not give the authority to requisition the listed items below.

C–2 EXPLANATION OF COLUMNS

The following paragraphs define the columns of Section II.

a. Column (1)-Item Number. This number is assigned to the entry in the listing.

b. Column (2)-Level. This column identifies the lowest level of maintenance for the listed item.

C - Operator/Crew

O - Unit Maintenance

c. Column (3)-National Stock Number. This is the National Stock Number assigned to the item: use it to request and requisition the item.

d. Column (4)-Description. Indicates the Federal Item name. The line for each item indicates the part number.

e. Column (5)-Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

SECTION II. EXPENDABLE SUPPLIES AND DURABLE SUPPLIES

(1) ITEM NO.	(2) LEVEL	(3) NSN	(4) DESCRIPTION	(5) U/M
1	C	7920-00-205-1711	Rag, Wiping, Cotton and Cotton Synthetic (81348) DDD-R-30, Grade B (58536) A-A-531	LB
2	C	5975-01-274-0220	Mounting Base, Tiedown, Electrical	LB
3	C	5975-01-265-6900	Strap, Tiedown, Electrical Components	LB

APPENDIX D UNIT MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

D–1 SCOPE

This Repair Parts and Special Tools List (RPSTL) lists and authorizes spares and repair parts; special tools; special Test, Measurement and Diagnostic Equipment (TMDE); and other special support equipment required for the performance of unit maintenance of Computer Set, Digital AN/UYK-128 (V)1 & (V)2. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the Source, Maintenance and Recoverability (SMR) codes.

D–2 GENERAL

In addition to Section I, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence. Bulk material are listed by item name in FIG. BULK at the end of the section. Repair part kits are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in this section.

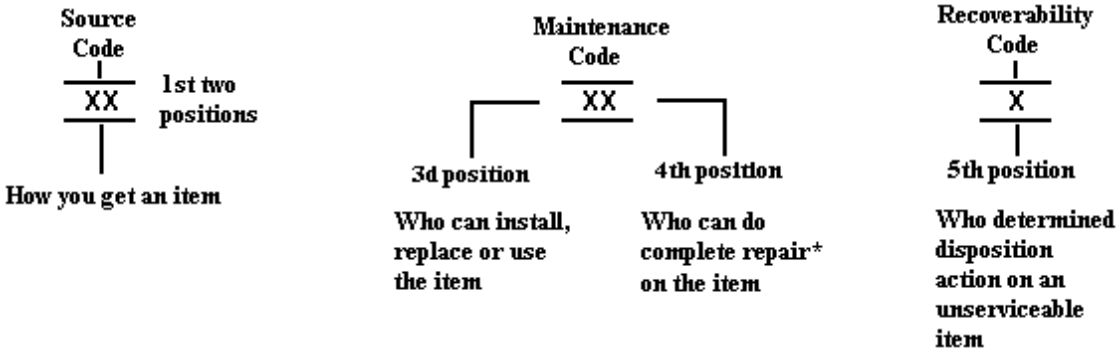
b. Section III. Special Tools List. Not applicable.

c. Section IV. Cross – Reference indexes. A list, in National Item Identification Number (NIIN) sequence, of all National Stock Numbered (NSN) appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

D–3 EXPLANATION OF COLUMNS (SECTION II AND III)

a. ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

b. SMR CODE (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a five-position code containing supply/requisition information, maintenance category authorization criteria and disposition instruction, as shown in the following breakout.



NOTE

*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) Source code. The source code tells you how to get an item needed for maintenance, repair or overhaul of an end item/equipment. Explanations of source codes follows:

Source Code	Application/Explanation
PA PB PC** PD PE PF PG	Stocked items: use the applicable NSN to request/requisition items with these source codes. They are authorized to the level indicated by the code entered in the 3d position of the SMR code. **NOTE** Items coded PC are subject to deterioration.
KD KF KB	Items with these codes are not to be requested/ requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.

D-1.3 EXPLANATION OF COLUMNS (SECTION II AND III) (Continued)

(1) Source code (Continued)

Source Code	Application/Explanation
MO – (Made at org/AVUM Level) MF – (Made at DS/AVUM Level) MH – (Made at GS Level) ML – (Made at Specialized Repair Act (SRA)) MD – Made at Depot	Items with these codes are not to be requested/ requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AO – (Assembled by org/AVUM Level) AF – (Assembled by DS/AVUM Level) AH – (Assembled by GS Category) AL – (Assembled by SRA) AD – (Assembled by Depot)	Items with these codes are not to be requested/ requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the category of maintenance indicated by the source code. If the third position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA	Do not requisition an “XA” coded item. Order its next higher assembly.
XB	If an “XB” item is not available from salvage, order it using the CAGEC and part number given.
XC	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer’s part number.
XD	Item is not stocked. Order an “XD” - coded item through normal supply channels using the CAGEC and part number given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as source of supply for items with the above source codes, except for those source coded “XA” or those aircraft support items restricted by requirements of AR 750-1.

D-1.3 EXPLANATION OF COLUMNS (SECTION II AND III) (Continued)

(2) Maintenance code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance category authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following categories of maintenance.

Maintenance Code – 3rd	**Application/Explanation**
C	Crew or operator maintenance done within organization or aviation maintenance.
O	Unit or aviation unit category can remove, replace, and use the item.
F	Direct support or aviation intermediate category can remove, replace, and use the item.
H	General support category can remove, replace, and use the item.
L	Specialized repair activity can remove, replace, and use the item.
D	Depot category can remove, replace, and use the item.

NOTE

Some limited repair may be done on the item at a lower category of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions.) This position will contain one of the following maintenance codes.

Maintenance Code – 4th	**Application/Explanation**
O	Unit or aviation unit is the lowest category that can do complete repair of the item
F	Direct support or aviation intermediate category is the lowest level that can do complete repair of the item.
H	General support is the lowest category that can do complete repair of the item.
L	Specialized repair activity (designate the specialized repair activity) is the lowest category that can do complete repair of the item.
D	Depot is the lowest category that can do complete repair of the item.
Z	Non-repairable. No repair is authorized.
B	No repair is authorized. (No parts or special tools are assigned for the maintenance of a “B” coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user category.

D-1.3 EXPLANATION OF COLUMNS (SECTION II AND III) (Continued)

(3) Recoverability code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z	Non-repairable item. When unserviceable, condemn and dispose of the item at the category of maintenance shown in the third position of SMR code.
O	Reparable item. When uneconomically reparable, condemn and dispose of the item at unit or aviation unit category.
F	Reparable item. When uneconomically reparable, condemn and dispose of the item at direct support or aviation intermediate category.
H	Reparable item. When uneconomically reparable, condemn and dispose of the item at general support category.
D	Reparable item. When beyond lower category repair capability, return to depot. Condemnation and disposal of item not authorized below depot category.
L	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. NSN (Column (3)). The NSN for the item is listed in this column.

d. CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor or Government agency, etc., that supplies the item.

e. PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

D-1.3 EXPLANATION OF COLUMNS (SECTION II AND III) (Continued)

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part number listed.

f. DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The physical security classification of the item is indicated by the parenthetical entry (insert applicable physical security classification abbreviation, e.g., Phy Sec C1 (C) – Confidential, Phy Sec C1 (S) – Secret, Phy Sec C1 (T) – Top Secret).

(3) Items that are included in kits and sets are listed below the name of the kit or set.

(4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(5) Part numbers for bulk materials are referenced in this column in the line entry for the item to be manufactured/fabricated.

(6) Hardness Critical Item (HCI). A support item that provides the equipment with special protection from Electro-Magnetic Pulse (EMP) damage during a nuclear attack.

(7) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line of the description (before UOC).

(8) Usable on code, when applicable (see paragraph 5, special information).

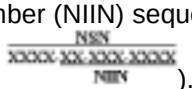
(9) In the Special Tools section, the Basis Of Issue (BOI) appears as the last line in the entry for each special tool, special TMDE, and other special support equipment. When density of equipment supported exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.

(10) The statement “END OF FIGURE” appears just below the last item description in Column (6) for a given figure in both section II and section III.

g. QTY (Column (7)). Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, sub-functional group, or an assembly. A “V” appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

D–4 EXPLANATION OF COLUMNS (SECTION IV)

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) STOCK NUMBER column. This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN (i.e., 

). When using this column to locate an item, ignore the first four digits of the NSN. When requisitioning items use the complete NSN (13 digits) sequence.

(2) FIG. Column. This column lists the number of the figure where the item is identified/located. The illustrations are in numerical sequence in sections II and III.

(3) ITEM column. This item number identifies the item associated with the figure listed in the adjacent Fig. Column. This item is also identified by the NSN listed on the same line.

(4) PART NUMBER column. This column indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) FIG. column. This column lists the number of the figure where the item is identified/located in sections II and III.

(2) ITEM column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

D–5 SPECIAL INFORMATION

a. USABLE ON CODE. The usable on code appears in the lower left corner of the Description column heading. Usable On Code are shown as "UOC:" in the Description Column (justified left) on the first line following applicable item description/nomenclature. Uncoded items are applicable to all models identification of the Usable On Codes in the RPSTL are:

Code	Used On	Code	Used On
31G	AN/UYK-128(V1)	32H	M992 FAASV
31H	AN/UYK-128(V2)	32J	M985/978/1074/1075 HEMTT/PLS
31U	M981 FIST-V	32K	M997 HMMWV Ambulance
31V	M577 Medical	32L	M548A3 Volcano
31W	M577 Mortar	32M	M1064 Mortar
31X	M1070 (HET)	32N	M35A3 2.5 Ton Cargo
31Y	M1068 Brigade	32P	M1031 CUCV
31Z	M1037/1097 Rigid Wall Shelter	32Q	M923 5 Ton Cargo
32A	M1068 SICPS Battalion	32R	M93 Fox
32B	M1068 FDCV	32S	M9 ACE
32C	M934 Van, Expando	32T	M998/M1026/M1038 HMMWV
32D	SICPS Tent	32U	M1096A6 Paladin
32E	M113 APC Common	32V	Avenger
32F	M60 AVLB/M	32W	Q36
32G	M881 Hercules	32X	DUCE

b. FABRICATION INSTRUCTIONS. Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. NSN (or part number if no NSN is assigned) for bulk materials is also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in TM 11-7010-326-20&P.

c. INDEX NUMBERS. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk material list in Section II.

d. ASSOCIATED PUBLICATIONS. The publications listed below pertain to The Computer Set, Digital AN/UYK-128 (V)1 & (V)2 and the installation kits:

Publication	Short Title
TM 11-7010-326-10	Operator's Manual for Computer Set, Digital AN/UYK-128 (V)1 & (V)2.
TM 11-7010-326-20&P	Unit Maintenance Manual for Computer Set, Digital AN/UYK-128 (V)1 & (V)2.
TB 11 7010-326-20	Unit Maintenance Technical Bulletin for Computer Set, Digital AN/UYK-128 (V)1 & (V)2 Installation Kits.
TM 11-7010-326-30&P	Direct Support Maintenance Manual for Computer Set, Digital AN/UYK-128 (V)1 & (V)2.

D–5 SPECIAL INFORMATION (Continued)

e. ILLUSTRATIONS - LISTING. Only illustrations containing unit level authorized items from these manuals appear in this RPSTL. Only those parts coded “C” or “O” in the third position of the SMR code are listed in the tabular listing; therefore, there may be a break in the item number sequence, figure number and page number. Only illustrations containing crew or unit level authorized items appear in this RPSTL.

D–6 HOW TO LOCATE REPAIR PARTS

a. When National Stock Number Or Part Number Is Not Known.

(1) First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the end item on the figure and use the Figure and Item Number Index to find the NSN.

(4) Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

b. When NSN Is Known.

(1) First. If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

(2) Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

c. When P/N Is Known.

(1) First. If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index work package. Identify the figure and item number.

(2) Second. Look up the item on the figure in the applicable repair parts list work package.

d. Abbreviations:

Abbreviations	Explanation
DU	Display Unit
KU	Keyboard Unit
PU	Processor Unit
RHDDC	Removable Hard Disk Drive Cartridge

.

SECTION II. REPAIR PARTS LIST

D–7 REPAIR PARTS LIST

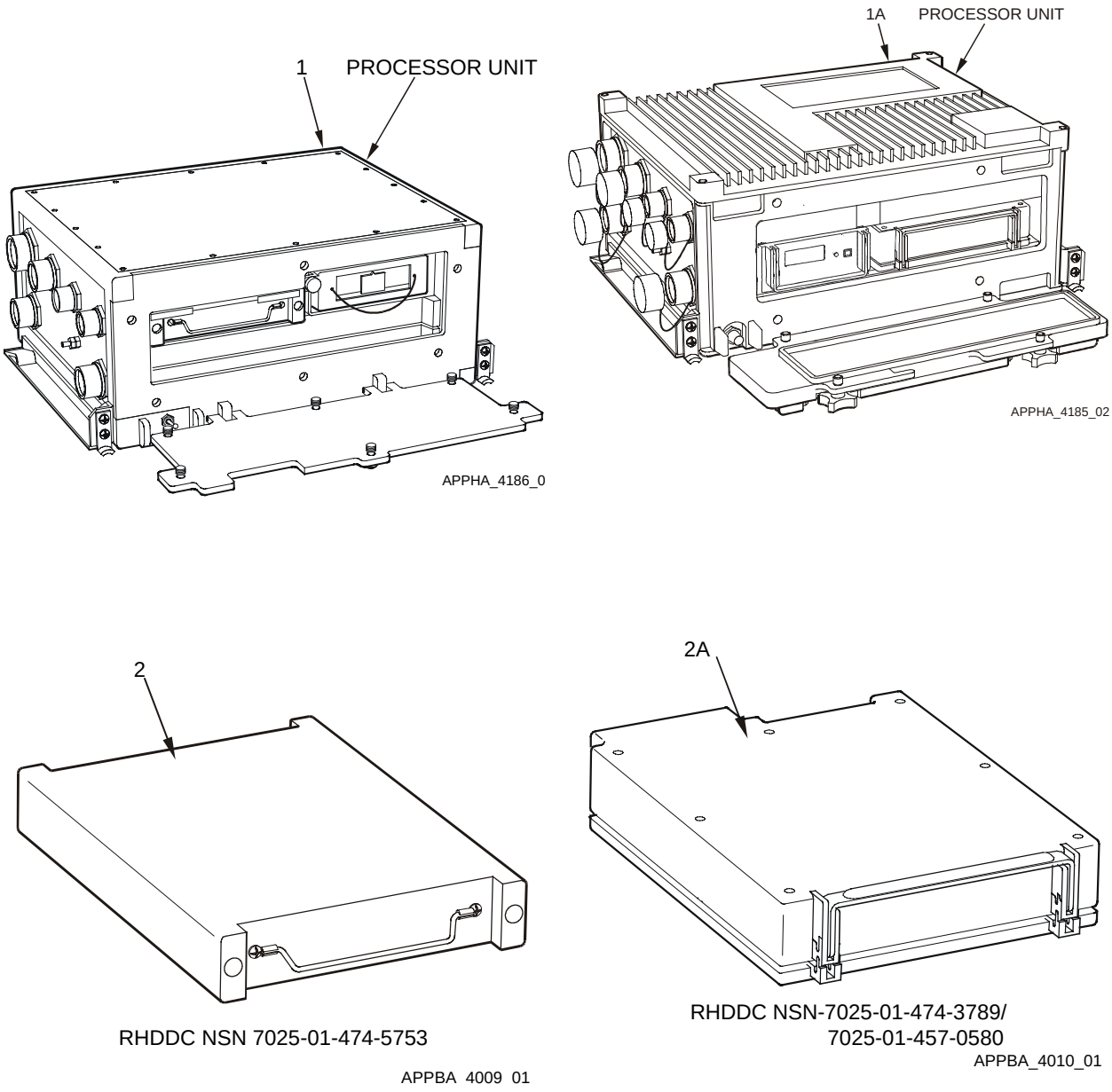
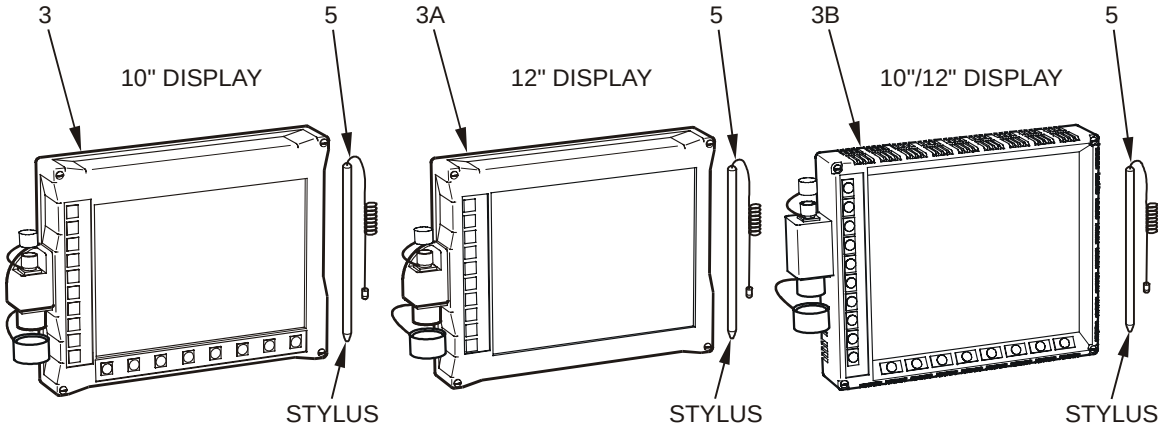
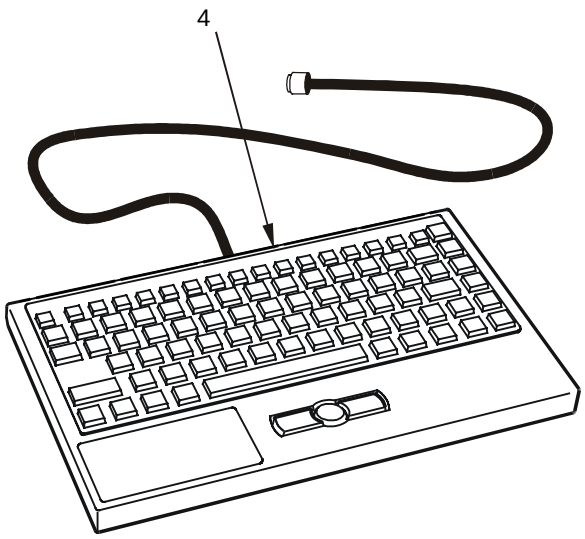


Figure D-1. Group 00 Computer Set, Digital - AN/UYK-128 (V)1 & (V)2 (Sheet 1 of 2)

D–7 REPAIR PARTS LIST (Continued)

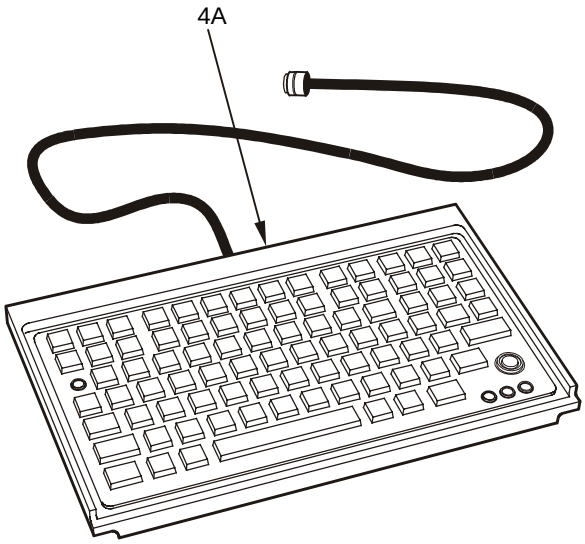


APPHA_4079_04



APPLI_4001_01

Keyboard Unit (KU) NSN 7025-01-474-3791/ 7025-01-487-0581



APPPA_4003_02

Keyboard Unit (KU) NSN 7025-01-474-3792

Figure D-1. Group 00 Computer Set, Digital – AN/UYK-128 (V)1 & (V)2 (Sheet 2 of 2)

D–7 REPAIR PARTS LIST (Continued)

GROUP 00 COMPUTER SET, DIGITAL

REPAIR PARTS LIST

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGE CODE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 00 COMPUTER SET, DIGITAL FIG. D-1 COMPUTER SET, DIGITAL AN/UYK-128 (V)1 & (V)2	
1	PAODD	7021-01-475-0217 or 7021-01-487-0579	0J198	881291-1 or 881291-3	COMPUTER, DIGITAL (PROCESSOR UNIT (PU)) (NOTE: CAN NOT BE USED WITH NSN: 7025-01-474-3789/7025-01-487-0580 DISK DRIVE UNIT)	1
1A	PAODD	7021-01-474-3793 or 7021-01-487-0578	0J198	881292-1 or 881292-2	COMPUTER, DIGITAL (PROCESSOR UNIT (PU)) (NOTE: CAN NOT BE USED WITH 7025-01-474-5753 DISK DRIVE UNIT)	1
2	PAODD	7025-01-474-5753	0J198	881296-1	DISK DRIVE UNIT (REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)) (NOTE: NOT INTERCHANGEABLE WITH NSN: 7025-01-474-3789/7025-01-487-0580)	1
2A	PAODD	7025-01-474-3789 or 7025-01-487-0580	0J198	881297-1 or 881297-2	DISK DRIVE UNIT (REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)) (NOTE: NOT INTERCHANGEABLE WITH 7025-01-474-5753 DISK DRIVE UNIT)	1
3	PAODD	7025-01-475-0229	0J198	881293-1, 881293-2	DISPLAY UNIT (DU) 10” (NOTE: THIS DISPLAY IS USED IN THE AN/UYK-128 (V)1 ONLY) UOC: 31G	1
3A	PAODD	7025-01-475-0282	0J198	881294-1, 881294-2	DISPLAY UNIT (DU) 12.1” (NOTE: THIS DISPLAY IS USED IN THE AN/UYK-128 (V)2 ONLY) UOC: 31H	1

D–7 REPAIR PARTS LIST (Continued)

GROUP 00 COMPUTER SET, DIGITAL

REPAIR PARTS LIST (Continued)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGE CODE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
3B	PAODD	7025-01-475-0280	0J198	881299-1, 881299-2	DISPLAY UNIT (DU) (NOTE: THIS DISPLAY IS USED FOR BOTH (V)1 & (V)2 CONFIGURATIONS) UOC: 31G, 31H	1
4	PAODD	7025-01-474-3791 or 7025-01-487-0581	0J198	881295-1, 881295-2 or 881295-3	KEYBOARD, DATA ENTRY (KEYBOARD UNIT (KU))	1
4A	PAODD	7025-01-474-3792	0J198	881298-1	KEYBOARD, DATA ENTRY (KEYBOARD UNIT (KU))	1
5	PAOZZ	7520-01-484-1219	08YX1	59848-1	STYLUS	1

D–7 REPAIR PARTS LIST (Continued)

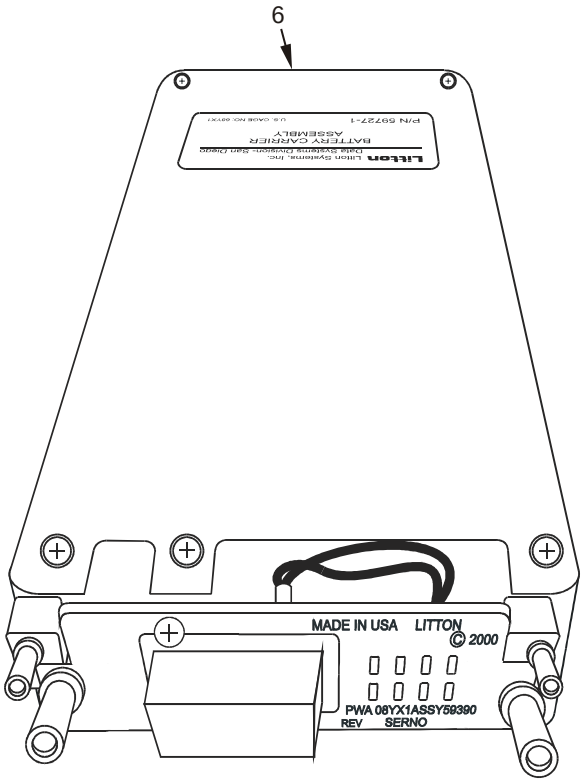


Figure D-2. Group 0101 Battery Assemblies (Sheet 1 of 2)

D–7 REPAIR PARTS LIST (Continued)

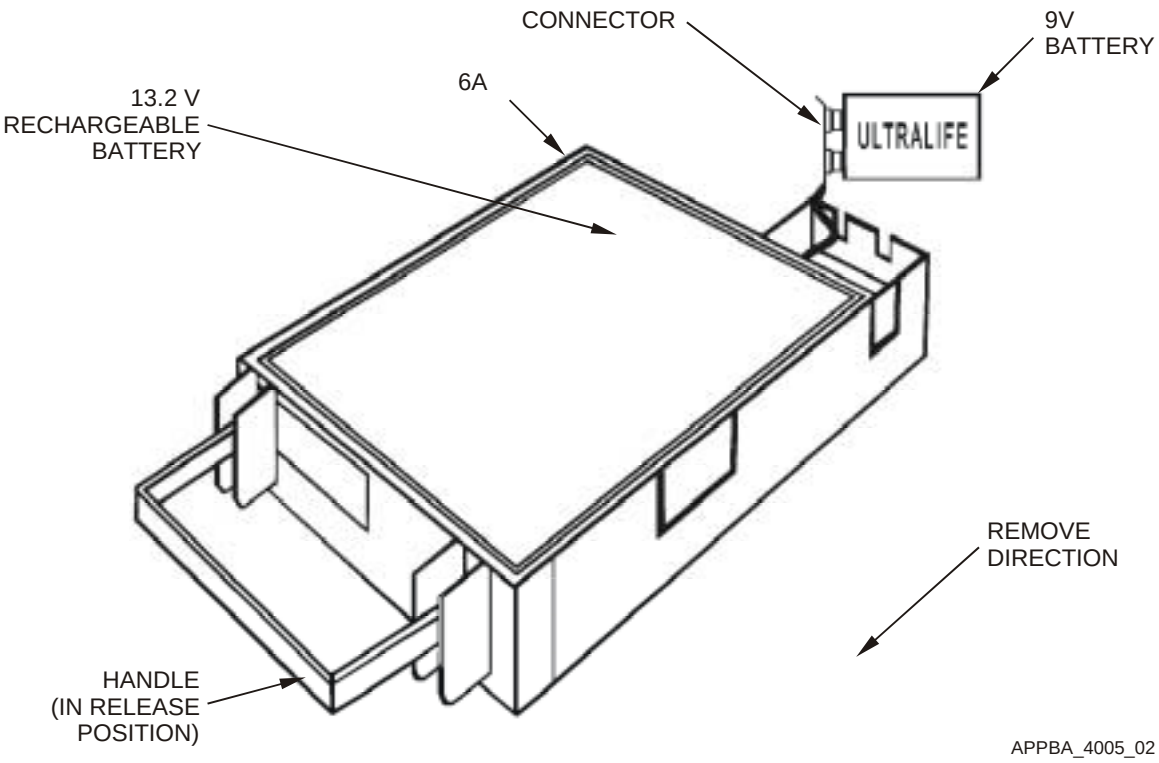


Figure D-2. Group 0101 Battery Assemblies (Sheet 2 of 2)

D–7 REPAIR PARTS LIST (Continued)

GROUP 0101 BATTERY ASSEMBLIES

REPAIR PARTS LIST

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGE CODE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
6	PAODD		0J198	59755-1	FIG. D-4 BATTERY BOX - REMOVABLE (NOTE: NOT INTERCHANGEABLE WITH PU NSN: 7021-01-474-3793/7025-01-487-0578) UOC: 31U THROUGH 32V	1
6A	PAODD		0J198	0410-06558-0000	FIG. D-4 BATTERY TRAY-REMOVABLE (NOTE: NOT INTERCHANGEABLE WITH PU NSN: 7021-01-475-0217/7021-01-487-0579) UOC: 31U THROUGH 32V	1

SECTION III. SPECIAL TOOLS LIST

D–8 SPECIAL TOOLS LIST

SPECIAL TOOLS LIST

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGE CODE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
Not Applicable						

SECTION IV. CROSS-REFERENCE INDEXES

D–9 CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
7025-01-474-3789/7025-01-487-0580	D-1	2A
7025-01-474-3791/7025-01-487-0581	D-1	4
7025-01-474-3792	D-1	4A
7021-01-474-3793/7021-01-487-0578	D-1	1A
7025-01-474-5753	D-1	2
7021-01-475-0217/7021-01-487-0579	D-1	1
7025-01-475-0229	D-1	3
7025-01-475-0280	D-1	3B
7025-01-475-0282	D-1	3A
7520-01-484-1219	D-1	5

PART NUMBER INDEX

PART NUMBER	FIG.	ITEM
881297-1, -2	D-1	2A
881295-1, -2, -3	D-1	4
881298-1	D-1	4A
881292-1, -2	D-1	1A
881296-1	D-1	2
881291-1, -3	D-1	1
881293-1, -2	D-1	3
881299-1, -2	D-1	3B
881294-1, -2	D-1	3A
598-48-1	D-1	5
59755-1	D-2	6
0410-06558-0000	D-2	6A

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APPENDIX E

PLATFORM CABLES

E–1 SCOPE

This appendix provides the cable connectors/layout and cable wiring diagrams noted in Table E-1 Cable-To-Platform Matrix for this manual.

Table E-1 is a Cable-To-Platform Matrix. To locate the correct assembly and wiring diagrams for each cable, find the applicable platform in the platform column (vertical) then the cable type (horizontal). At the intersection will be the figure numbers for the Assembly (A-) and Wiring (W-). Connected to the signal connector of the PU (J3) is the Serial Interface Adapter Device (SIAD) [P/N 881331-1]. This allows up to five serial port connections. The cables with letters following the W3 (usually N and P) go between the SIAD and the affected device.

Platforms with unusual cables are listed directly under the name of the platform. For interconnection diagrams, hardware part numbers and additional hardware information, refer to the applicable appendix (APP.) column for the platform in TB 11-7010-326-20. Table E-1 specifies cable assembly and cable wiring diagrams.

Table E-1. Cable-To-Platform Matrix

APP.	CABLE ⇒ PLATFORM ⇓	W1	W2	W3N	W3P	W4
A	M109A6 Paladin [Also] W1A - 881278-1 A-Figure E-17 W-Figure E-18 W3E – 881284-1 A-Figure E-15 W- Figure E-16	881279-1 A-Figure E-48 W-Figure E-49	881327-2 A-Figure E-3 W-Figure E-4	881336-1 A-Figure E-7 W-Figure E-8	N/A	881270-4 A-Figure E-11 W-Figure E-12
B	M1064 Mortar	861880-7 A-Figure E-1 W-Figure E-2	881327-4 A-Figure E-3 W-Figure E-4	881336-4 A-Figure E-5 W-Figure E-6	881335-4 A-Figure E-9 W-Figure E-10	881270-3 A-Figure E-11 W-Figure E-12
C	M981 FIST-V	861882-2 A-Figure E-13 W-Figure E-14	881327-2 A-Figure E-3 W-Figure E-4	881336-2 A-Figure E-7 W-Figure E-8	881335-2 A-Figure E-9 W-Figure E-10	881270-1 A-Figure E-11 W-Figure E-12
D	M9 ACE DOZER	861880-6 A-Figure E-1 W-Figure E-2	881327-1 A-Figure E-3 W-Figure E-4	881336-2 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	881270-2 A-Figure E-11 W-Figure E-12
E	M60 AVLB/M	861880-2 A-Figure E-1 W-Figure E-2	881327-2 A-Figure E-3 W-Figure E-4	881336-1 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	881270-2 A-Figure E-11 W-Figure E-12
F	M548A3 Volcano	861880-9 A-Figure E-1 W-Figure E-2	881327-1 A-Figure E-3 W-Figure E-4	881336-4 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	881270-3 A-Figure E-11 W-Figure E-12
G	M577 (FDC) MORTAR	861882-1 A-Figure E-13 W-Figure E-14	881327-2 A-Figure E-3 W-Figure E-4	881336-1 A-Figure E-7 W-Figure E-8	881335-2 A-Figure E-9 W-Figure E-10	881270-4 A-Figure E-11 W-Figure E-12
H	M577 MED	861882-2 A-Figure E-13 W-Figure E-14	881327-2 A-Figure E-3 W-Figure E-4	881336-4 A-Figure E-7 W-Figure E-8	881335-4 A-Figure E-9 W-Figure E-10	881270-2 A-Figure E-11 W-Figure E-12
I	M113 Common	861880-8 A-Figure E-1 W-Figure E-2	881327-2 A-Figure E-3 W-Figure E-4	881336-4 A-Figure E-7 W-Figure E-8	881335-2 A-Figure E-9 W-Figure E-10	881270-2 A-Figure E-11 W-Figure E-12
J	M113 APC Common	861880-8 A-Figure E-1 W-Figure E-2	881327-2 A-Figure E-3 W-Figure E-4	881336-4 A-Figure E-7 W-Figure E-8	881335-2 A-Figure E-9 W-Figure E-10	881270-2 A-Figure E-11 W-Figure E-12

Table E-1. Cable-To-Platform Matrix (Continued)

APP.	CABLE ⇒ PLATFORM ⇓	W1	W2	W3N	W3P	W4
K	M88A1 HERCULES	861880-5 A-Figure E-1 W-Figure E-2	881327-3 A-Figure E-3 W-Figure E-4	881336-2 A-Figure E-7 W-Figure E-8	881335-4 A-Figure E-9 W-Figure E-10	881270-1 A-Figure E-11 W-Figure E-12
L	M998/M1026/M1038 HMMWV With INTEGRATED RACK	866003-3 A-Figure E-1 W-Figure E-2	881327-1 A-Figure E-3 W-Figure E-4	881336-1 A-Figure E-7 W-Figure E-8	881335-1 A-Figure E-9 W-Figure E-10	N/A
M	M997 HMMWV Amb.	866003-1 A-Figure E-1 W-Figure E-2	881327-2 A-Figure E-3 W-Figure E-4	881336-3 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	N/A
N	M93A1 Fox [NBC] W3M – 881333-1 A-Figure E-40 W-Figure E-41	861880-1 A-Figure E-1 W-Figure E-2	881327-4 A-Figure E-3 W-Figure E-4	881336-3 A-Figure E-7 W-Figure E-8	N/A	881270-3 A-Figure E-11 W-Figure E-12
O	M998 Avenger 443-50061 (W401) A-Figure E-33 W-Figure E-34	443-50060 (W400) A-Figure E-33 W-Figure E-34	881327-2 A-Figure E-3 W-Figure E-4	443-50062 (W402) A-Figure E-35 W-Figure E-36	443-50063 (W403) A-Figure E-37 W-Figure E-38	881263-1 A-Figure E-46 W-Figure E-47
P	M1031 Shop Van CUCV	861880-4 A-Figure E-1 W-Figure E-2	881327-3 A-Figure E-3 W-Figure E-4	881336-1 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	N/A
Q	M985/978/1074/5 HEMTT/PLS	866003-1 A-Figure E-1 W-Figure E-2	881327-4 A-Figure E-3 W-Figure E-4	881336-2 A-Figure E-7 W-Figure E-8	881335-2 A-Figure E-9 W-Figure E-10	N/A
R	M923 5 Ton	866004-1 A-Figure E-39 W-Figure E-2	881327-1 A- Figure E-3 W-Figure E-4	881336-2 A-Figure E-7 W-Figure E-8	881335-2 A-Figure E-9 W-Figure E-10	N/A
S	M1037/1097 RWS	861888-1 A-Figure E-19 W-Figure E-20	881327-2 A-Figure E-3 W-Figure E-4	881336-3 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	N/A
T	M992 FAASV	866003-2 A-Figure E-1 W-Figure E-2	(2) 881327-3 A-Figure E-3 W-Figure E-4	881336-4 A-Figure E-7 W-Figure E-8	881335-4 A-Figure E-9 W-Figure E-10	881270-1 A-Figure E-11 W-Figure E-12

Table E-1. Cable-To-Platform Matrix (Continued)

APP.	CABLE ⇒ PLATFORM ⇓	W1	W2	W3N	W3P	W4
U	M1068 BR (Only)	861880-1 A-Figure E-1 W-Figure E-2	881327-1 A-Figure E-3 W-Figure E-4	881336-1 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	881271-1 (MESHNET) A-Figure E-11 W-Figure E-12
V	M1068 SICPS	861880-1 A-Figure E-1 W-Figure E-2	881327-1 A-Figure E-3 W-Figure E-4	881336-1 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	881270-1 A-Figure E-11 W-Figure E-12
W	M1068 FDCV	861880-1 A-Figure E-1 W-Figure E-2	881327-1 A-Figure E-3 W-Figure E-4	881336-1 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	881270-1 A-Figure E-11 W-Figure E-12
X	M934 VAN (Expando)	861880-3 A-Figure E-1 W-Figure E-2	881327-1 A-Figure E-3 W-Figure E-4	881336-4 A-Figure E-7 W-Figure E-8	881335-4 A-Figure E-9 W-Figure E-10	N/A
Y	M35 2 ½ Ton (Cargo Carrier)	866003-2 A-Figure E-1 W-Figure E-2	881327-1 A-Figure E-3 W-Figure E-4	881336-3 A-Figure E-7 W-Figure E-8	881335-2 A-Figure E-9 W-Figure E-10	N/A
Z	M58	866003-3 A-Figure E-1 W-Figure E-2	881327-2 A-Figure E-3 W-Figure E-4	881336-3 A-Figure E-7 W-Figure E-8	881335-2 A-Figure E-9 W-Figure E-10	881270-4 A-Figure E-11 W-Figure E-12
AA	M 1070 Heavy Equipment Transport (HET)	861880-8 A-Figure E-1 W-Figure E-2	881327-4 A-Figure E-3 W-Figure E-4	881336-3 A-Figure E-7 W-Figure E-8	881335-3 A-Figure E-9 W-Figure E-10	N/A
AB	SICPS Tent W5 – 881288-1 A-Figure E-44 W-Figure E-45 W6 – 881289-1 A-Figure E-42 W-Figure E-43	W1A 881317-1 A-Figure E-21 W-Figure E-22 W1B 881317-2 A-Figure E-23 W-Figure E-24 W1C 881319-1 A-Figure E-25 W-Figure E-26 W1D 881321-1 A-Figure E-27 W-Figure E-28 W1E 881326-1 A-Figure E-29 W-Figure E-30	881327-1 A-Figure E-3 W-Figure E-4	881336- 4 A-Figure E-7 W-Figure E-8	881335-1 A-Figure E-9 W-Figure E-10	N/A

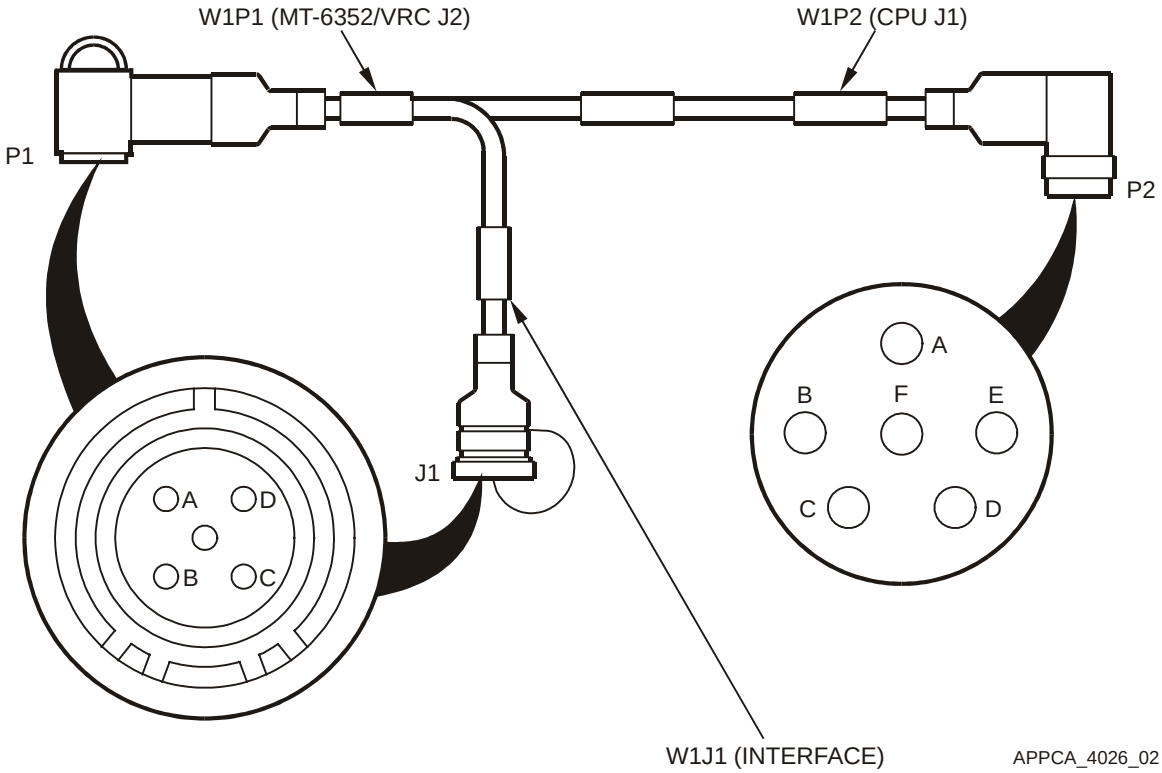

Figure E-1. W1 Power Cable Assembly

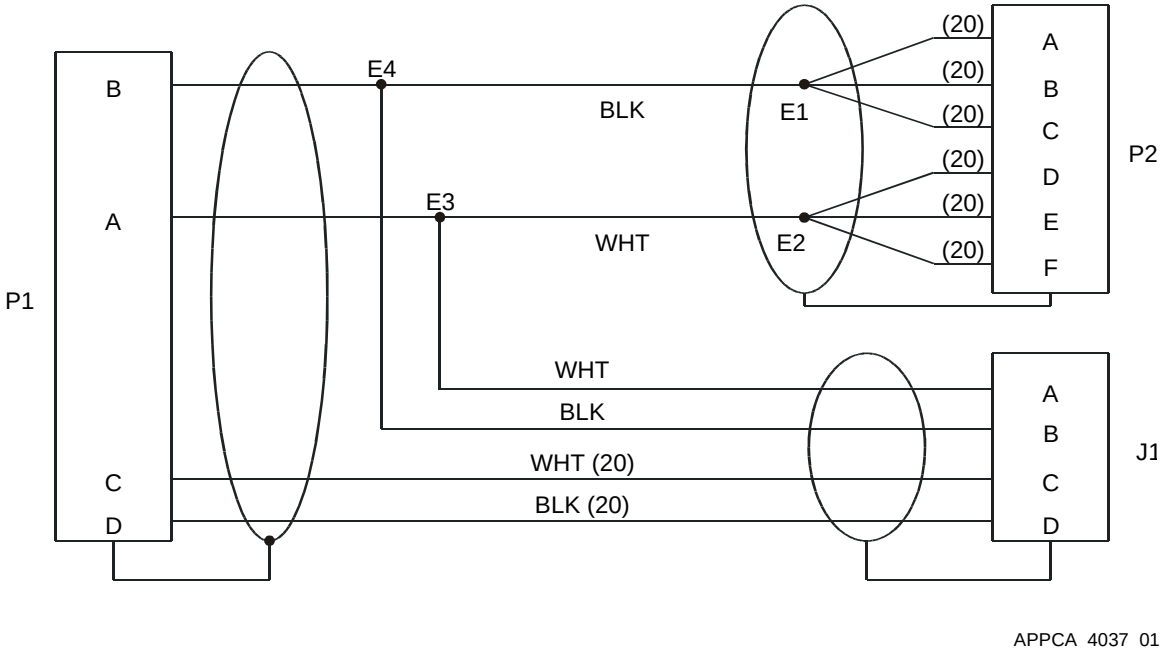

Figure E-2. W1 Power Cable Wiring Diagram

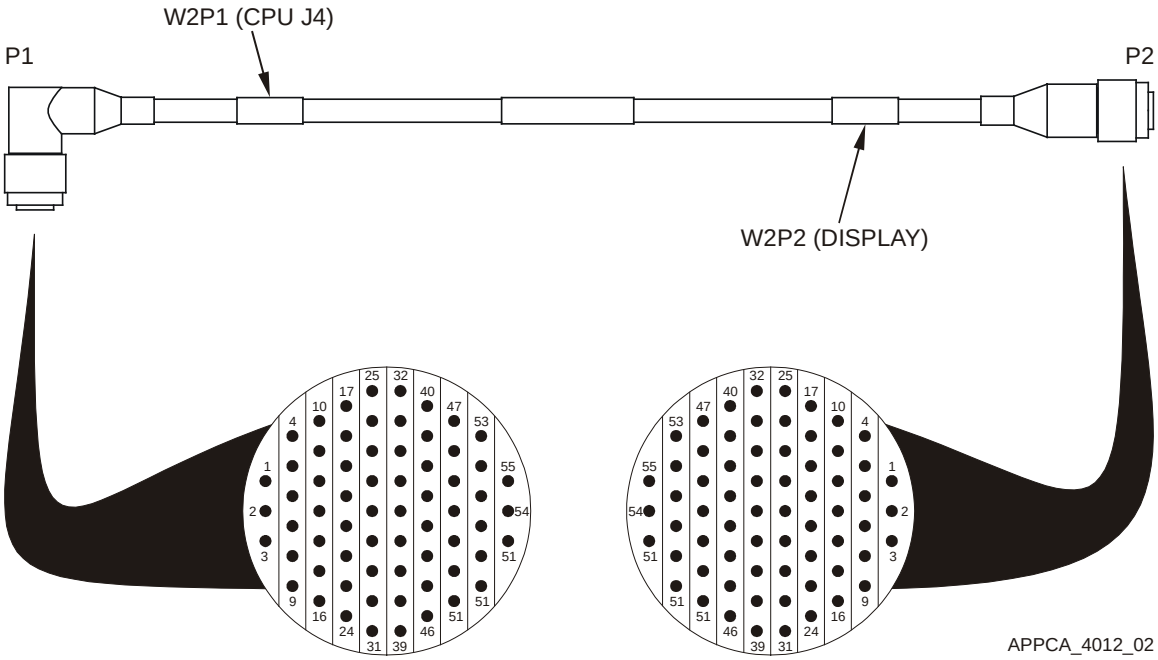

Figure E-3. W2 Display Cable Assembly

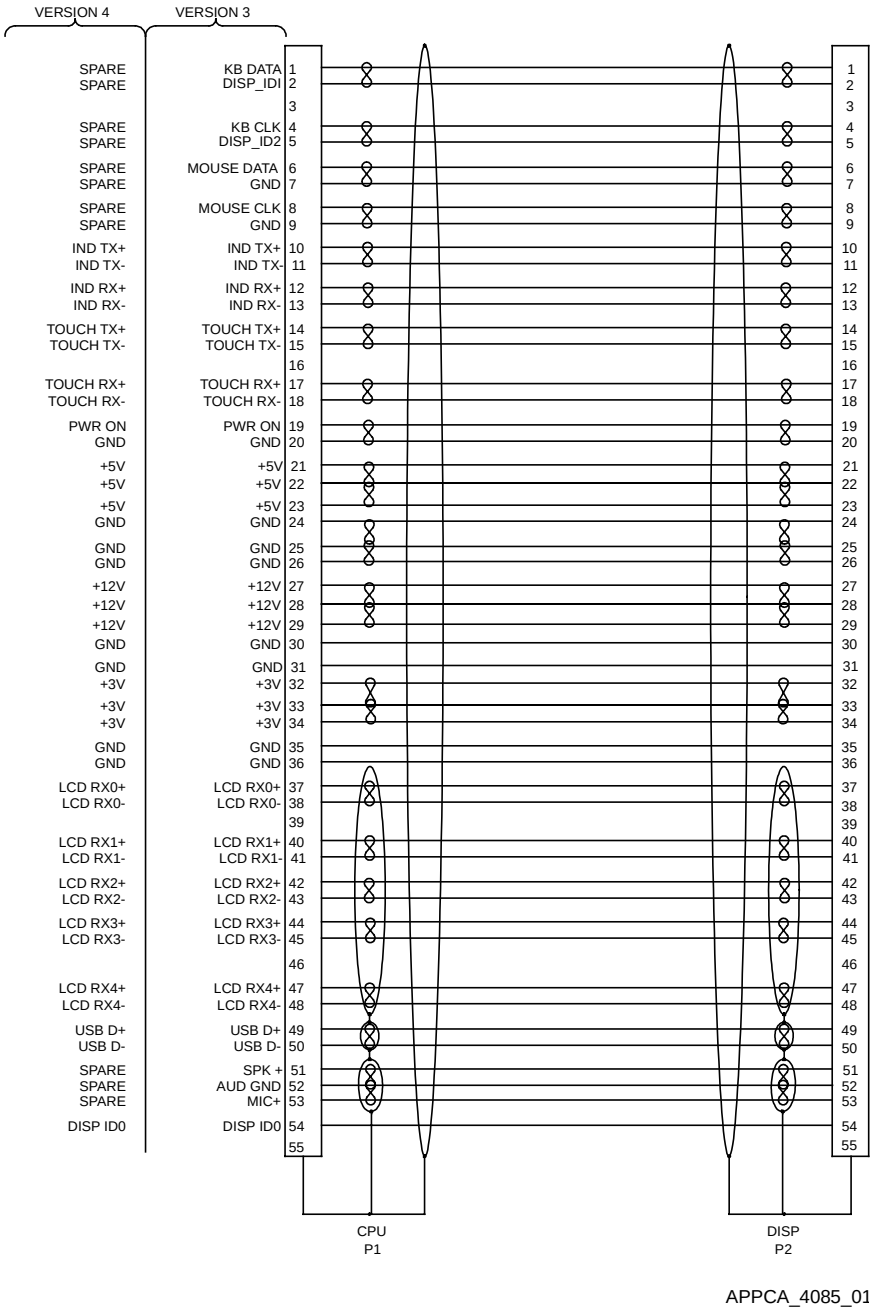

Figure E-4. W2 Display Cable Wiring Diagram

NOTE

The Serial Interface Adapter Device (SIAD) is used in most configurations and allows up to five connections to the signal input/output of the PU-J3. Other W3 cables connect between the SIAD and each specific device.

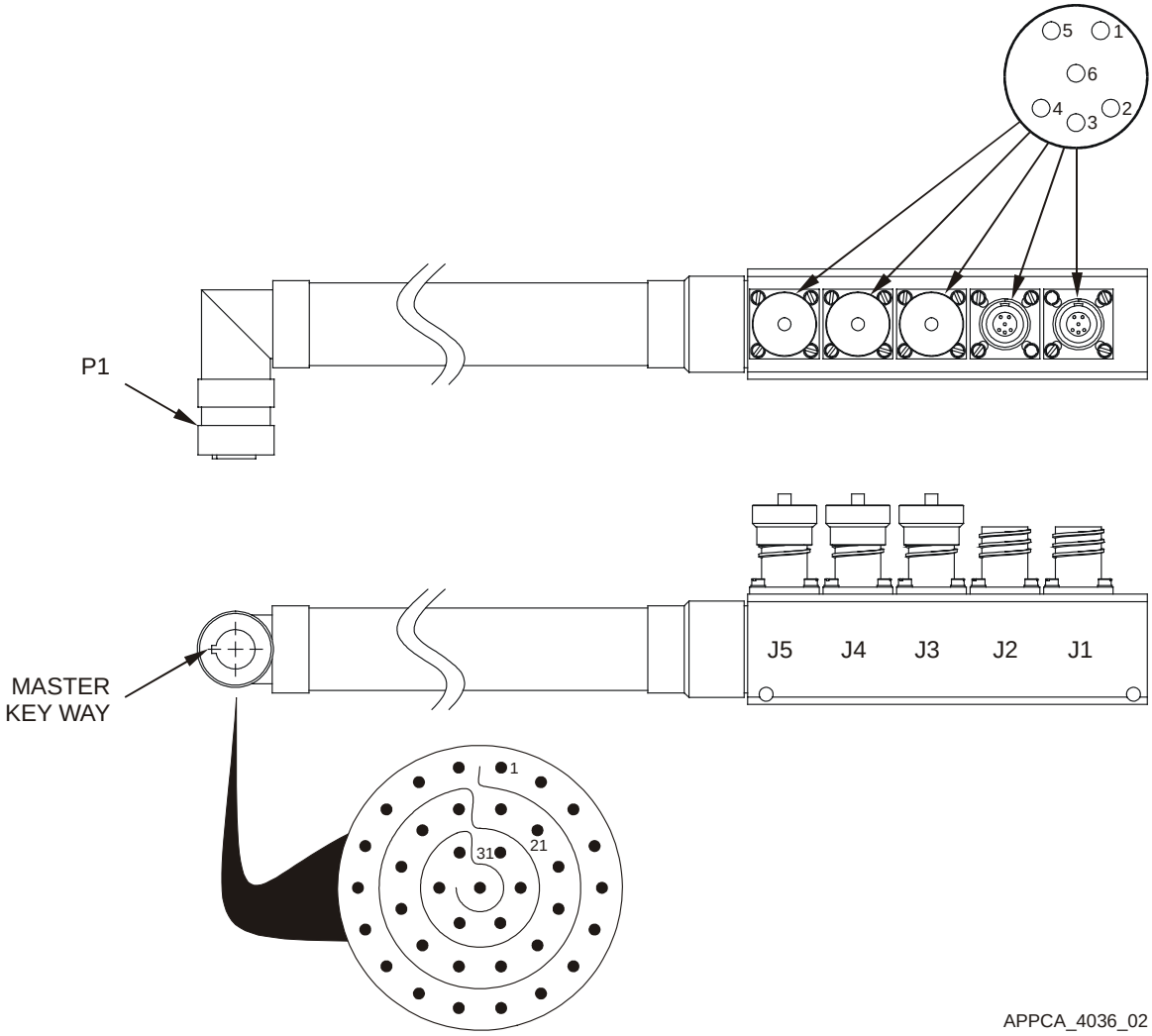

Figure E-5. SIAD Cable Assembly

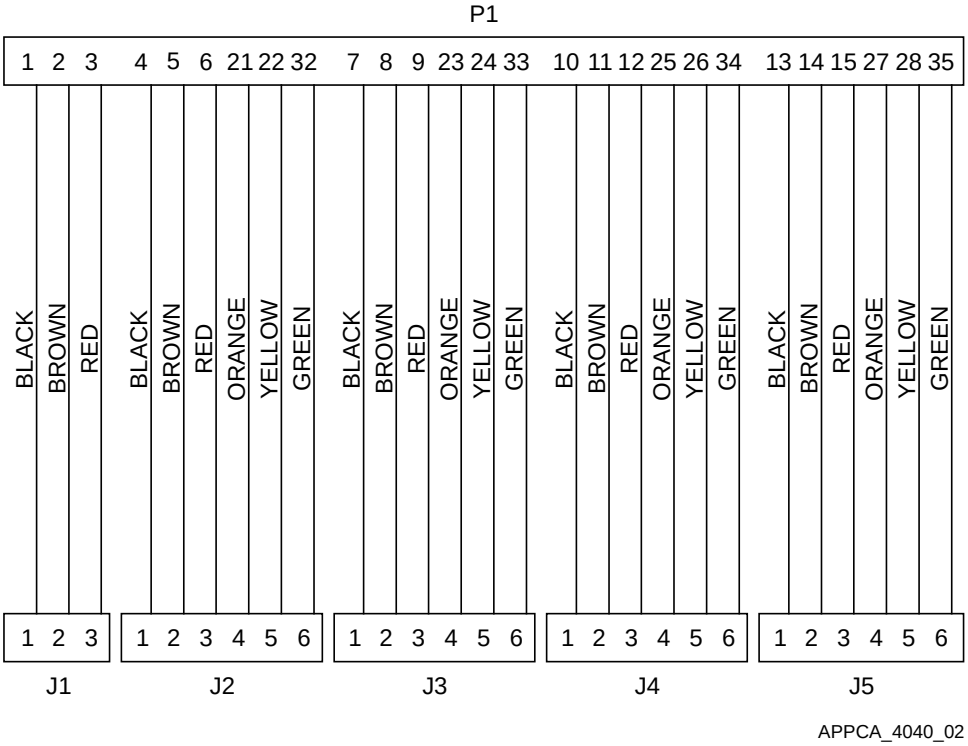

Figure E-6. SIAD Wiring Diagram

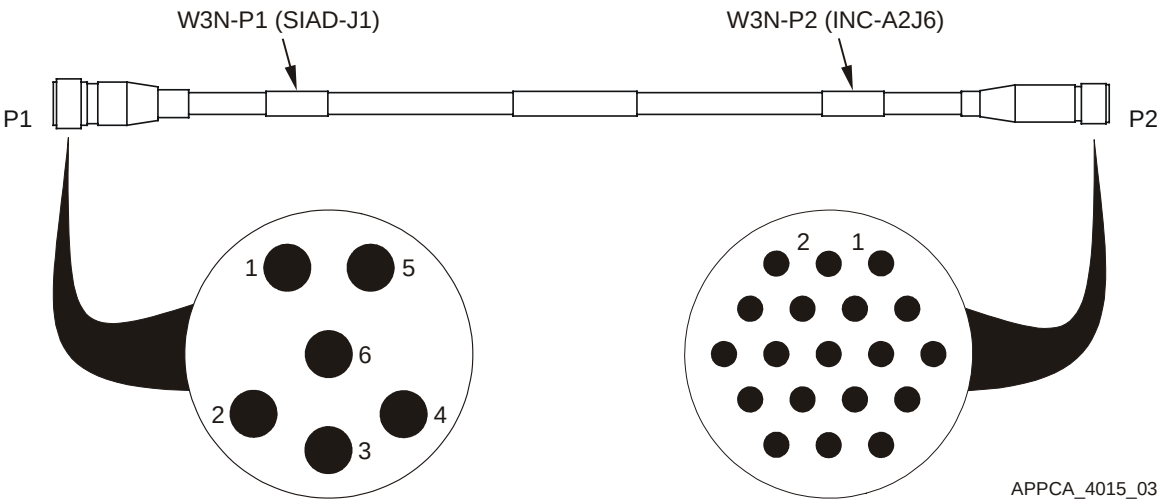

Figure E-7. W3N Cable Assembly

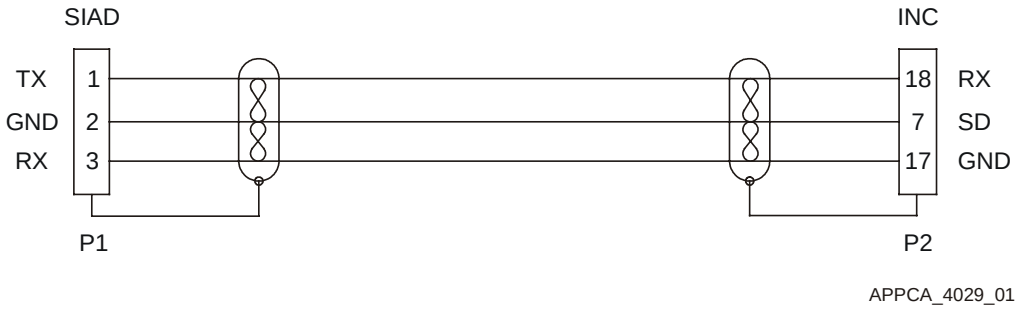

Figure E-8. W3N Wiring Diagram

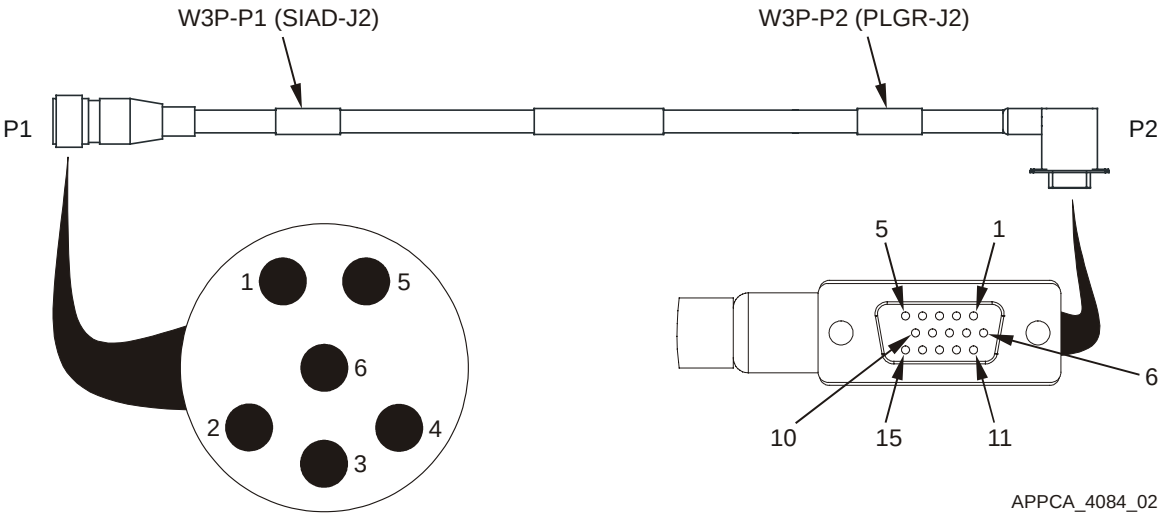

Figure E-9. W3P Cable Assembly

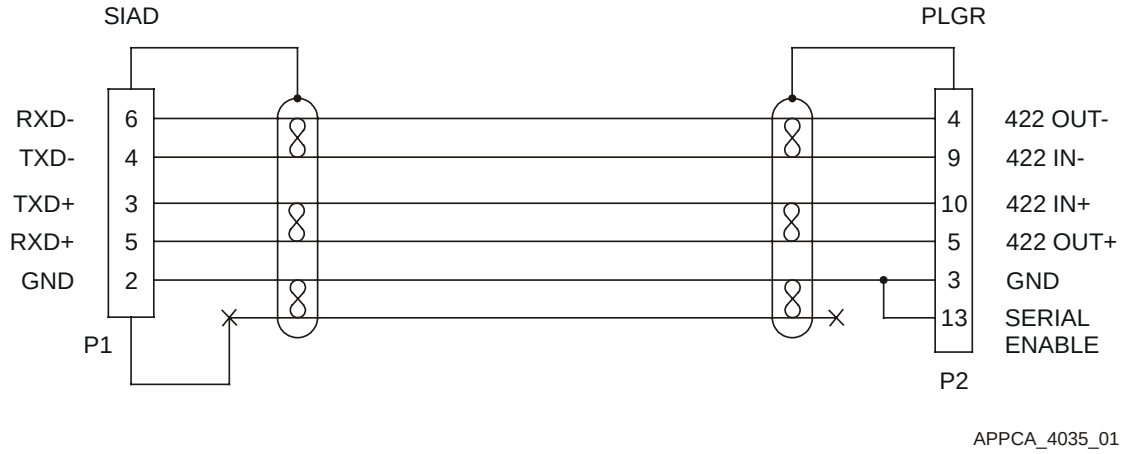

Figure E-10. W3P Wiring Diagram

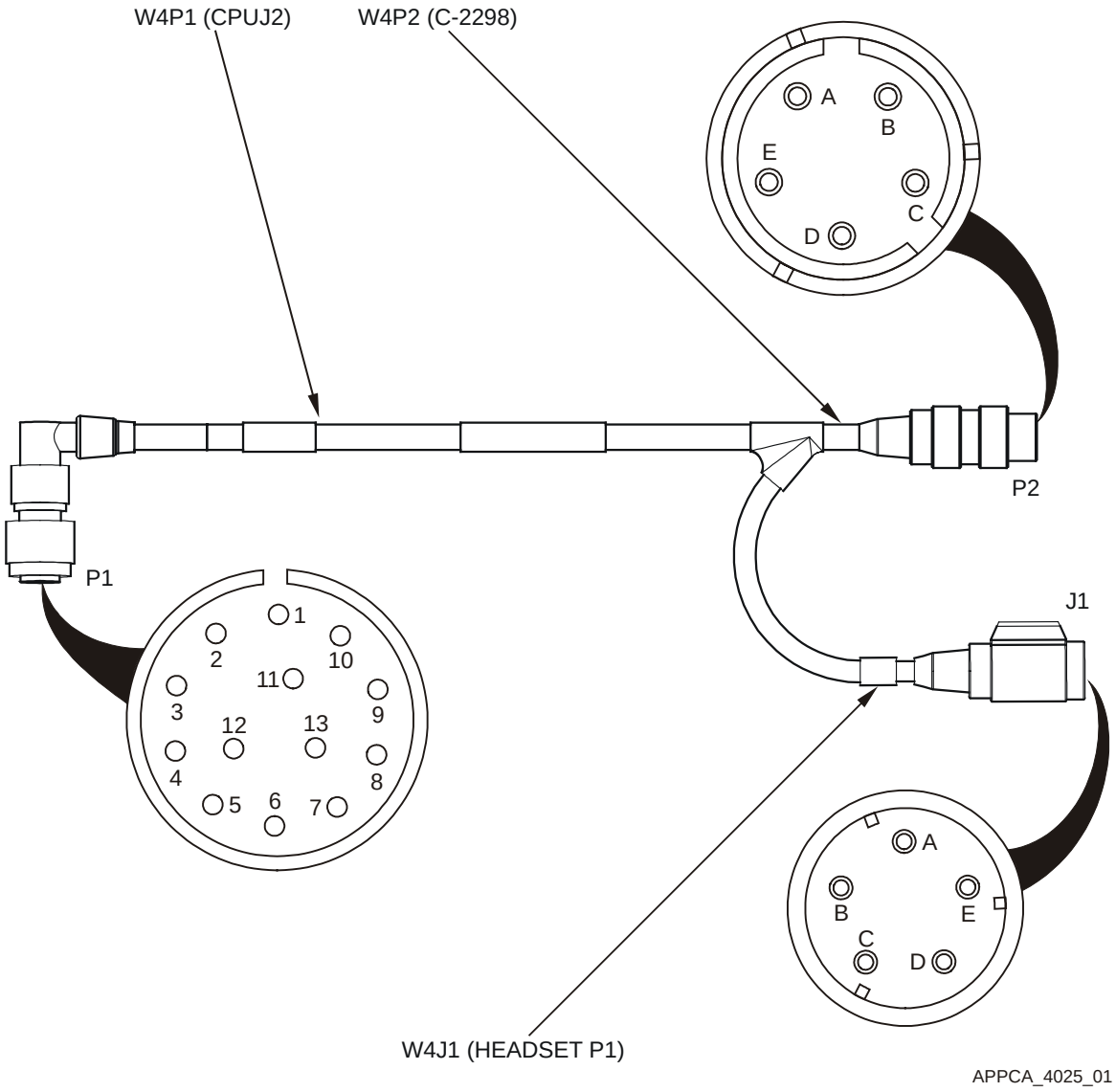

Figure E-11. W4 Cable Assembly

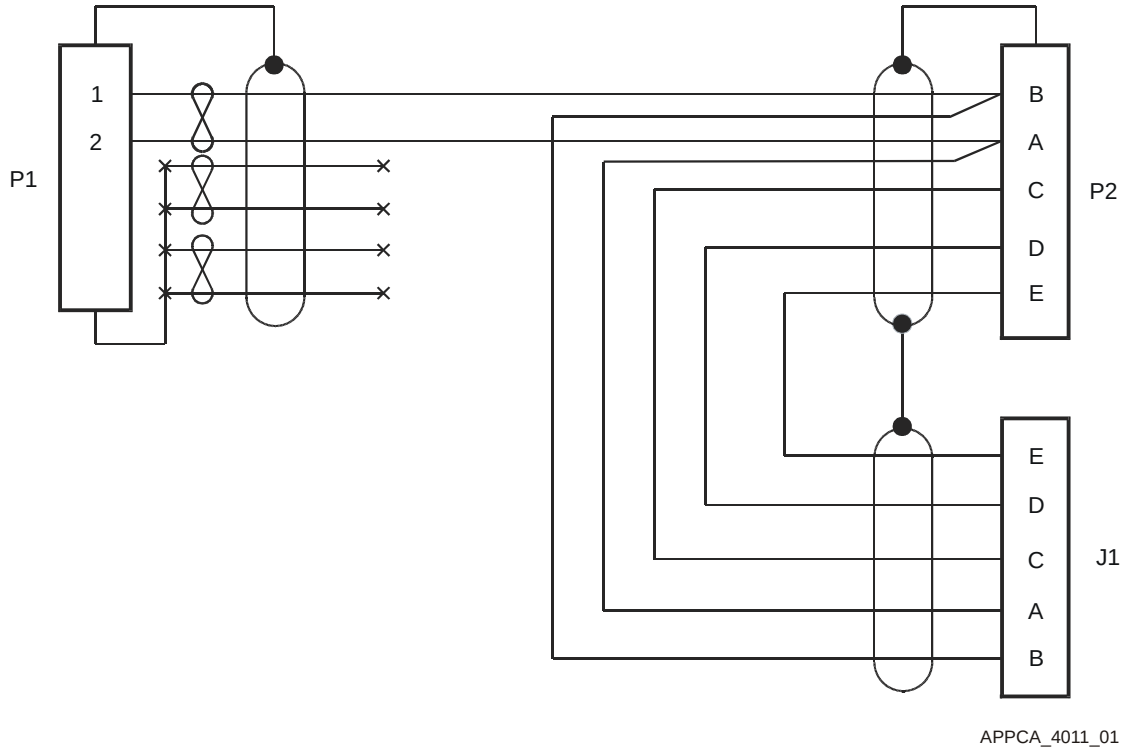

Figure E-12. W4 Wiring Diagram

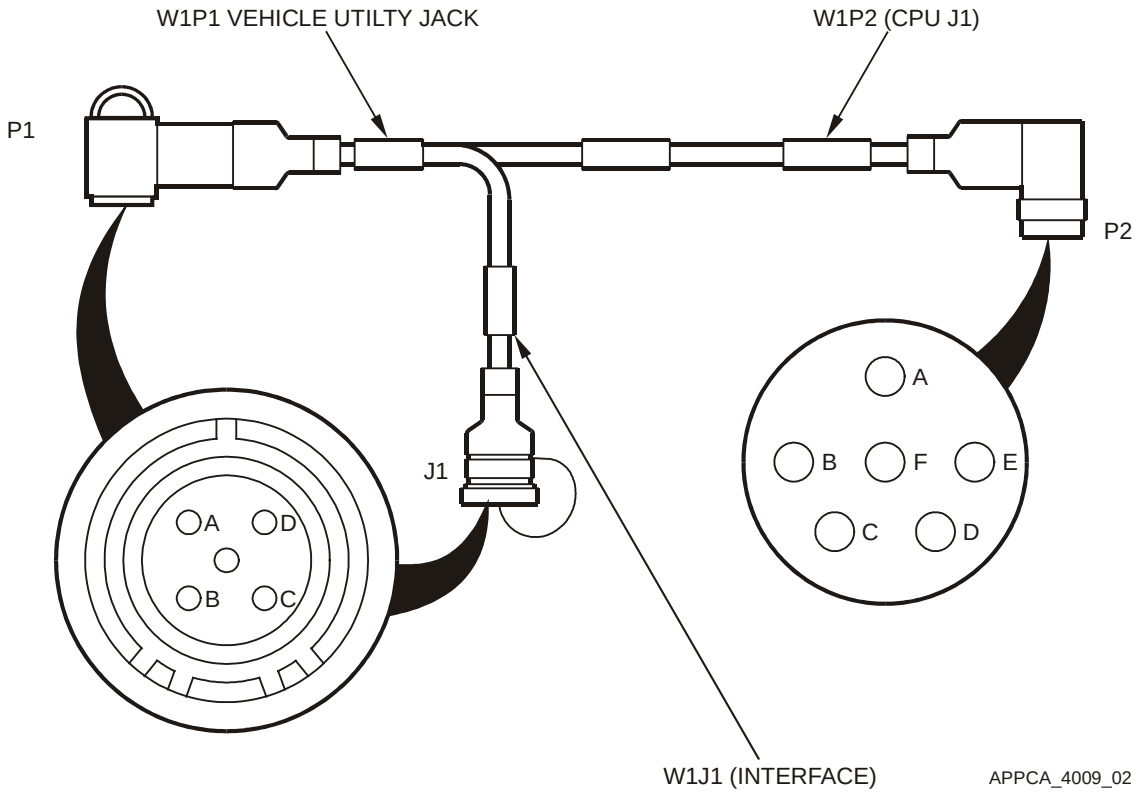

Figure E-13. W1 Cable Assembly

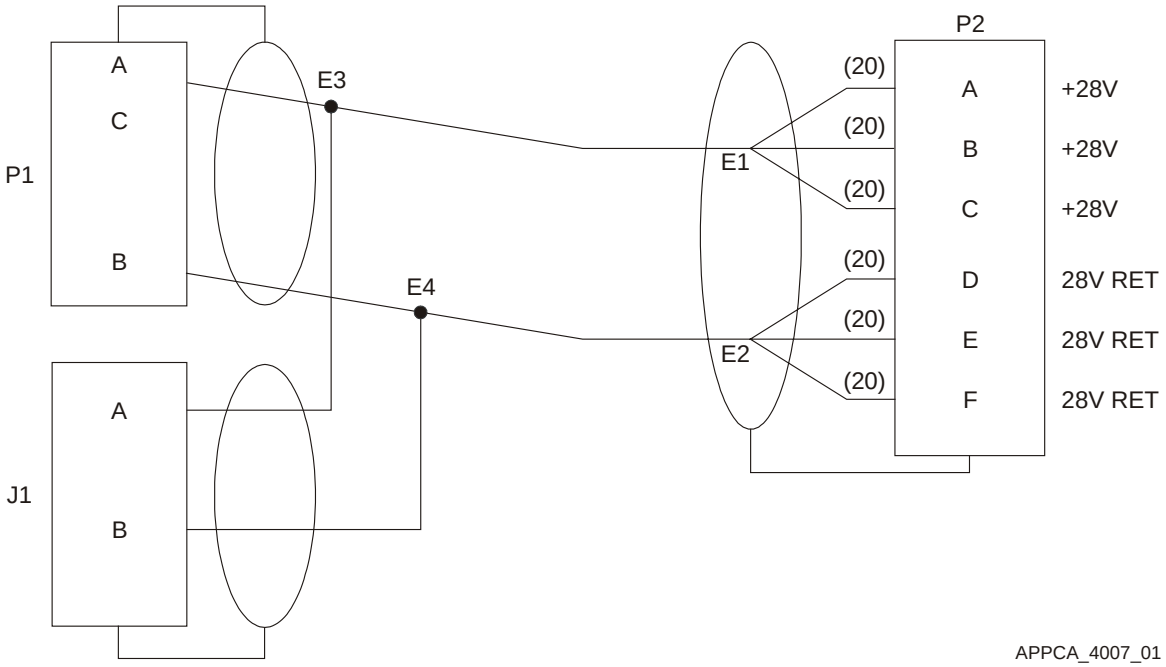

Figure E-14. W1 Wiring Diagram

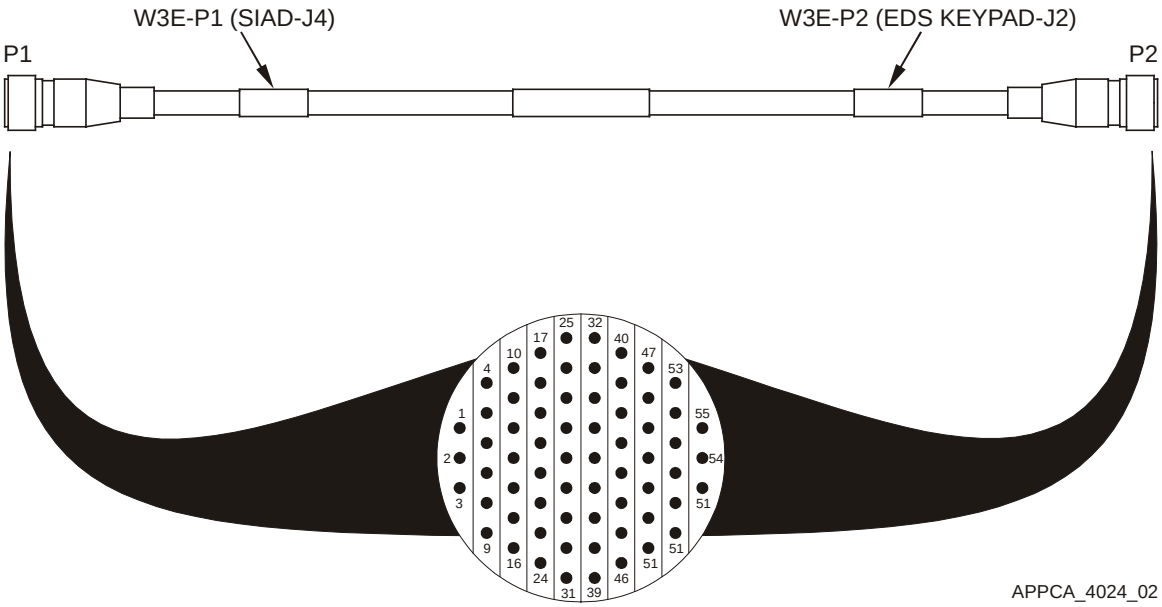

Figure E-15. W3E Cable Assembly (Paladin)

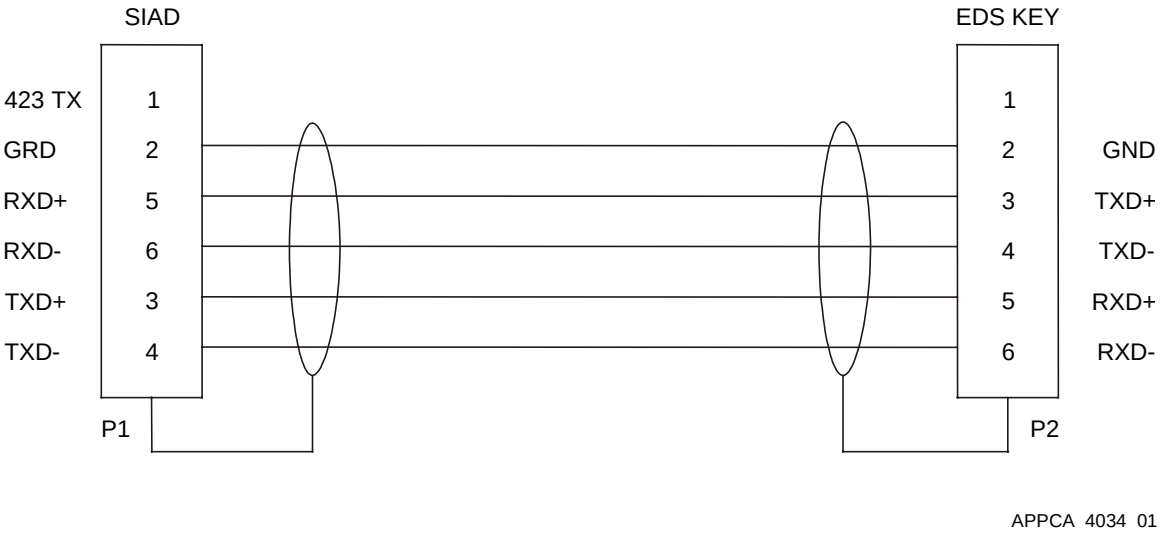

Figure E-16. Cable W3E Wiring Diagram (Paladin)

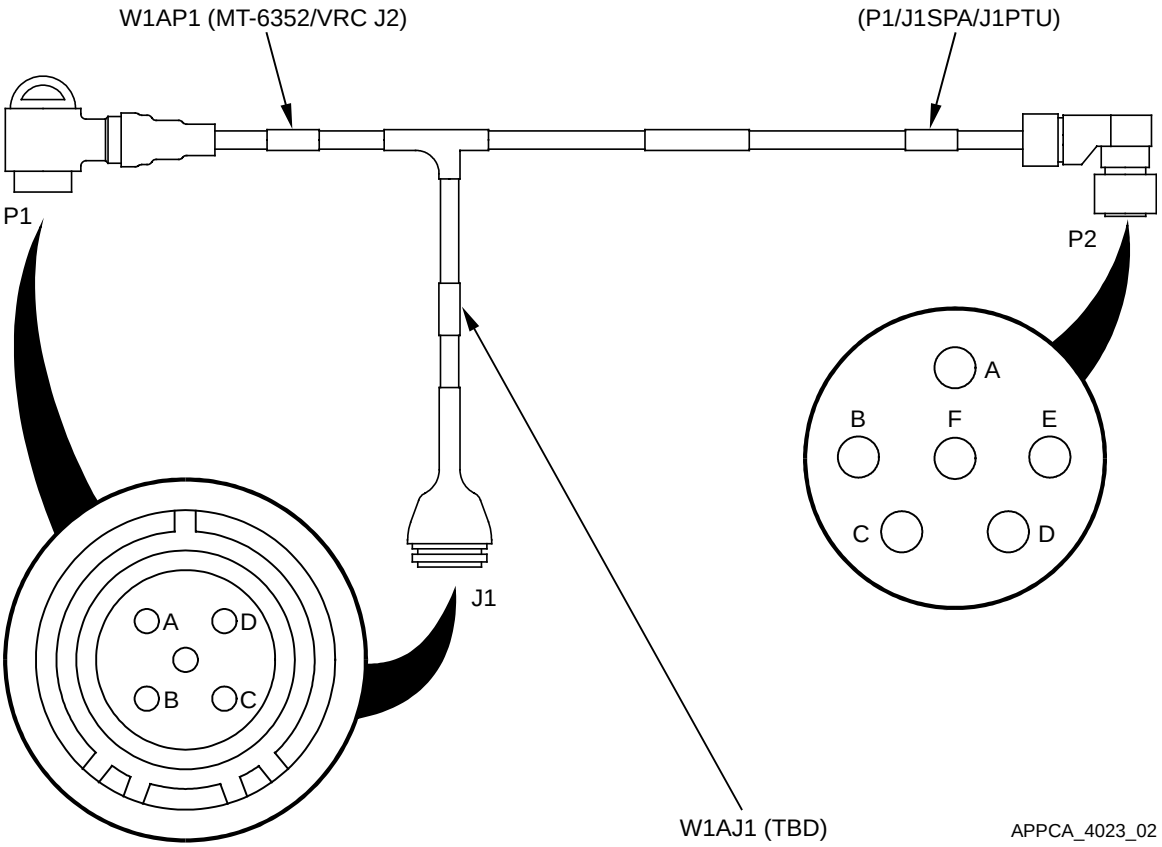

Figure E-17. W1A Cable Assembly (Paladin)

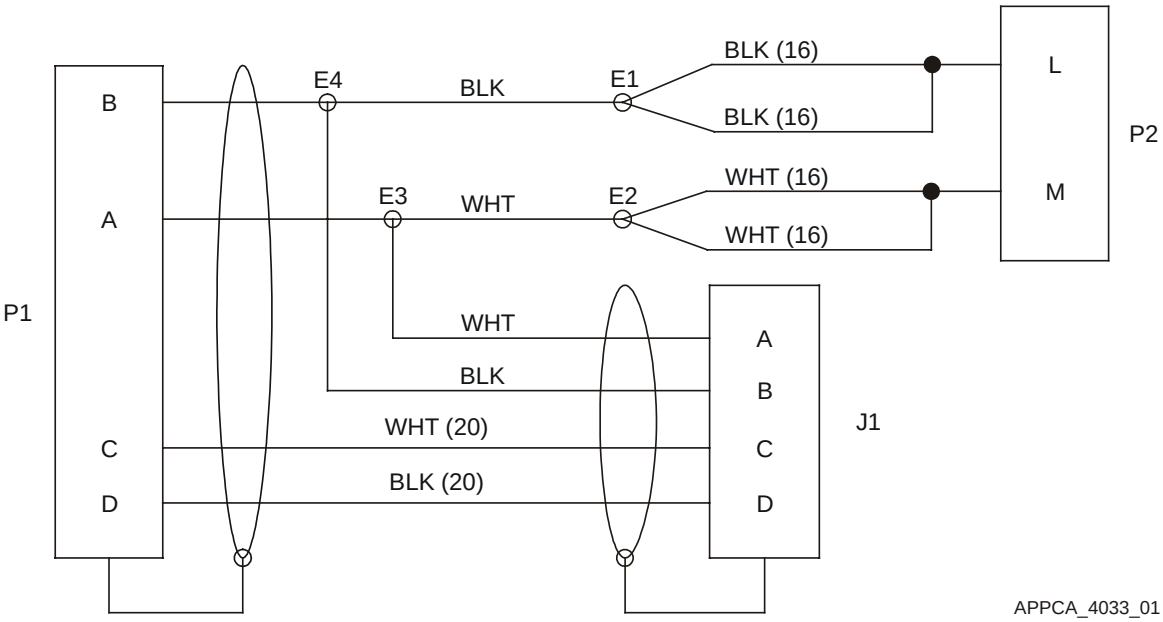

Figure E-18. W1A Wiring Diagram (Paladin)

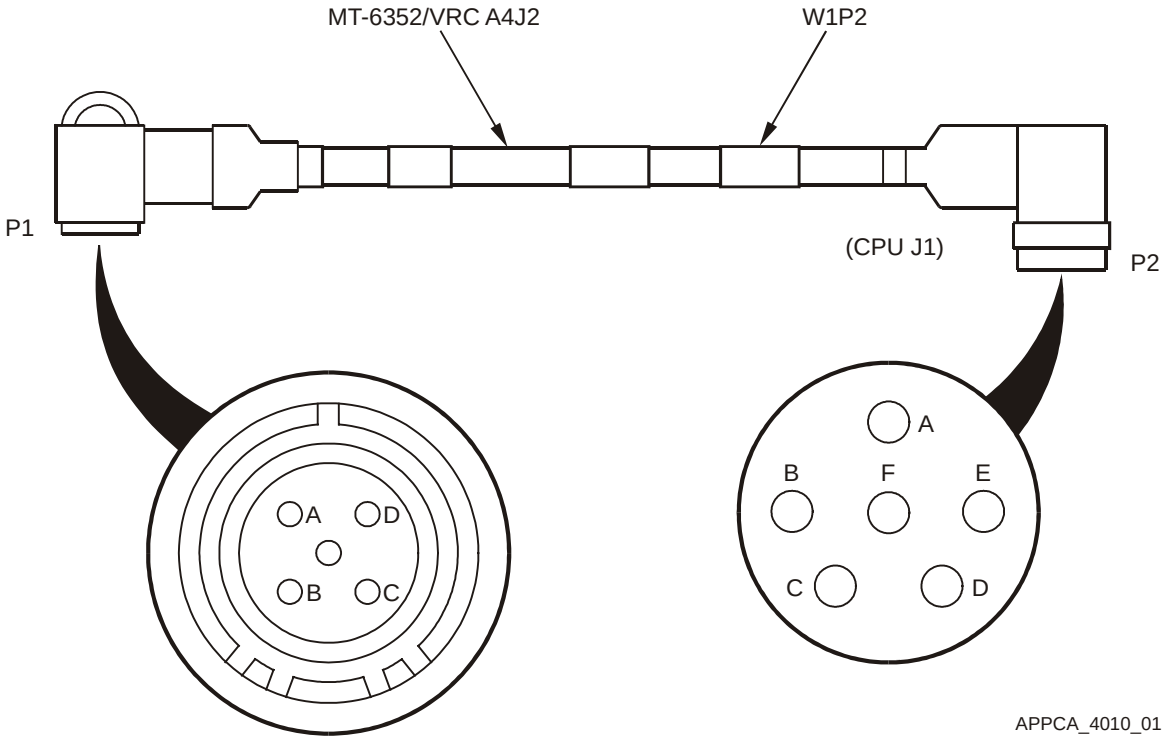

Figure E-19. W1 Cable Assembly

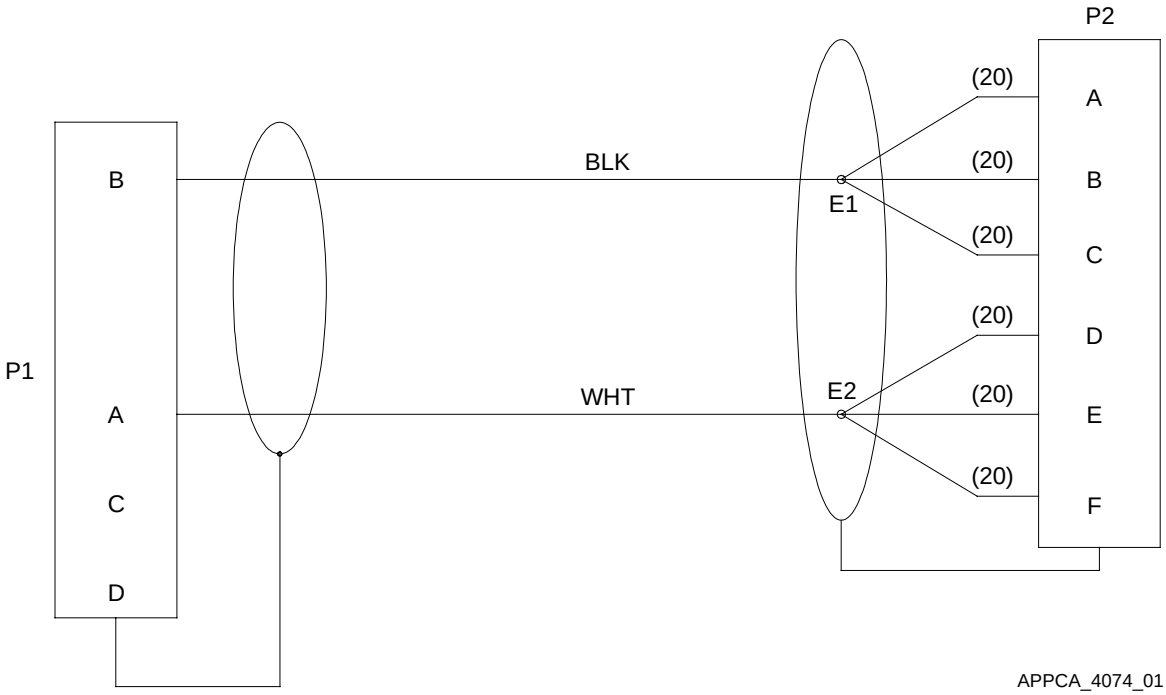

Figure E-20. W1 Wiring Diagram

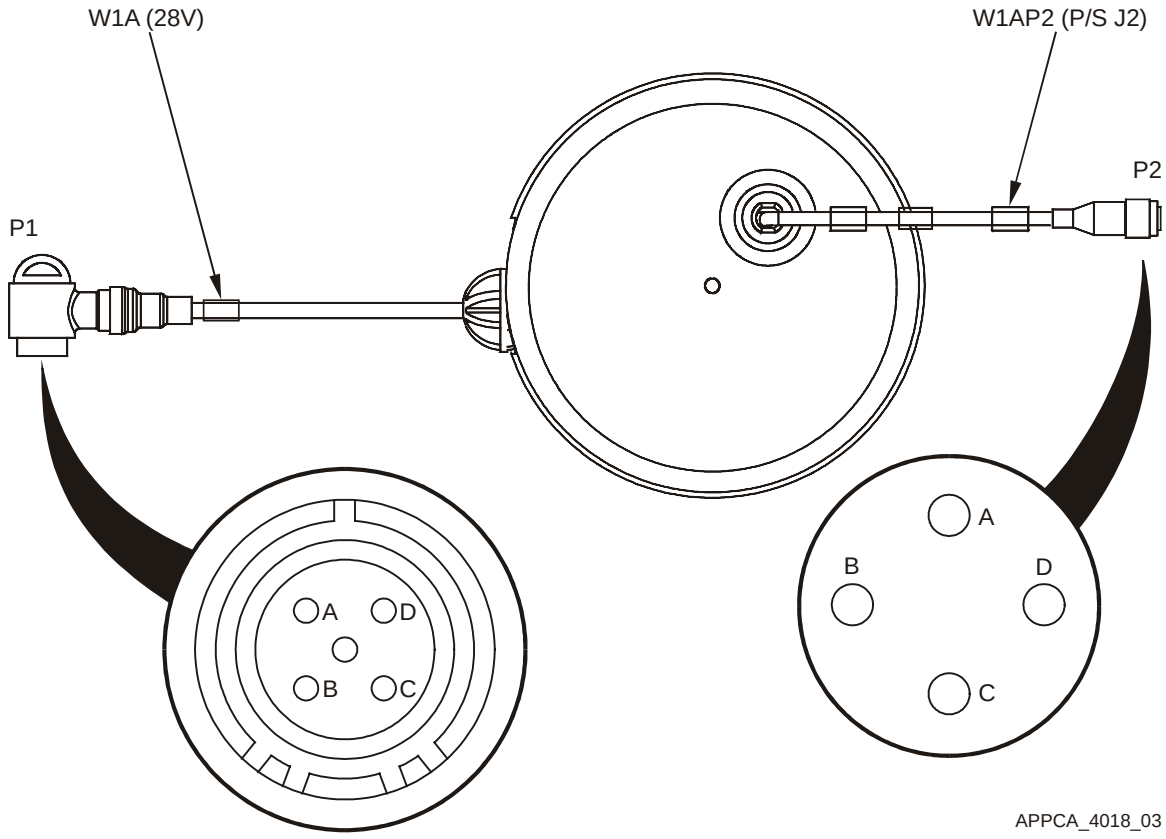

Figure E-21. W1A Cable Assembly (SICPS Tent)

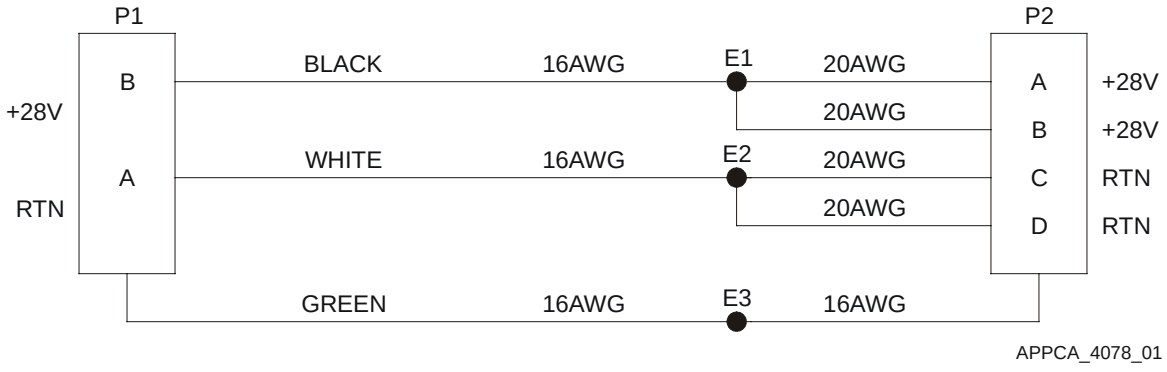

Figure E-22. W1A Wiring Diagram

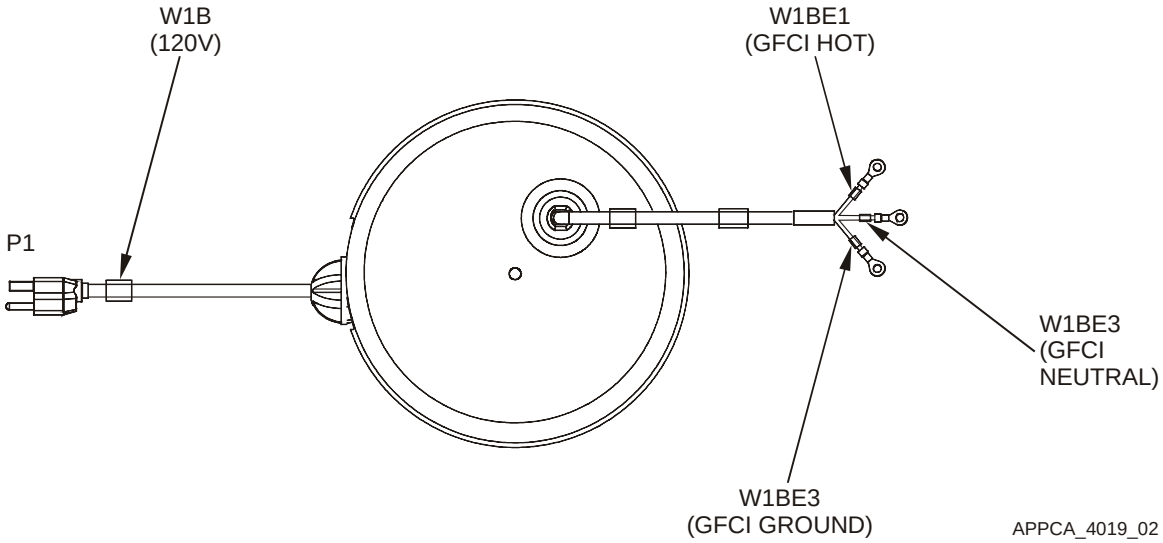

Figure E-23. W1B Cable Assembly (SICPS Tent)

Figure E-24. W1B Wiring Diagram

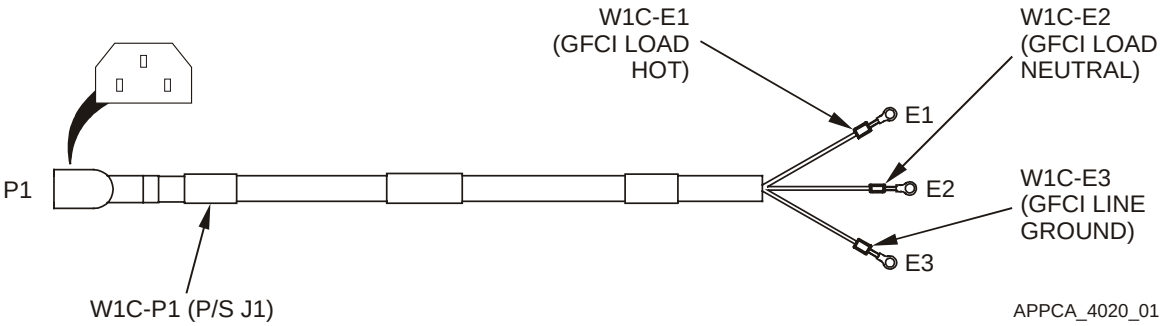

Figure E-25. W1C Cable Assembly (SICPS Tent)

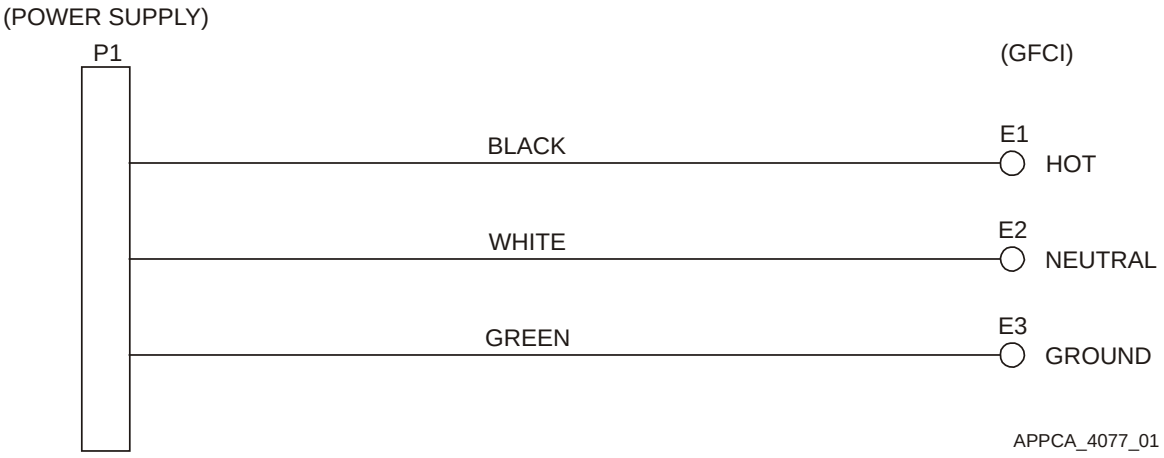

Figure E-26. W1C Wiring Diagram

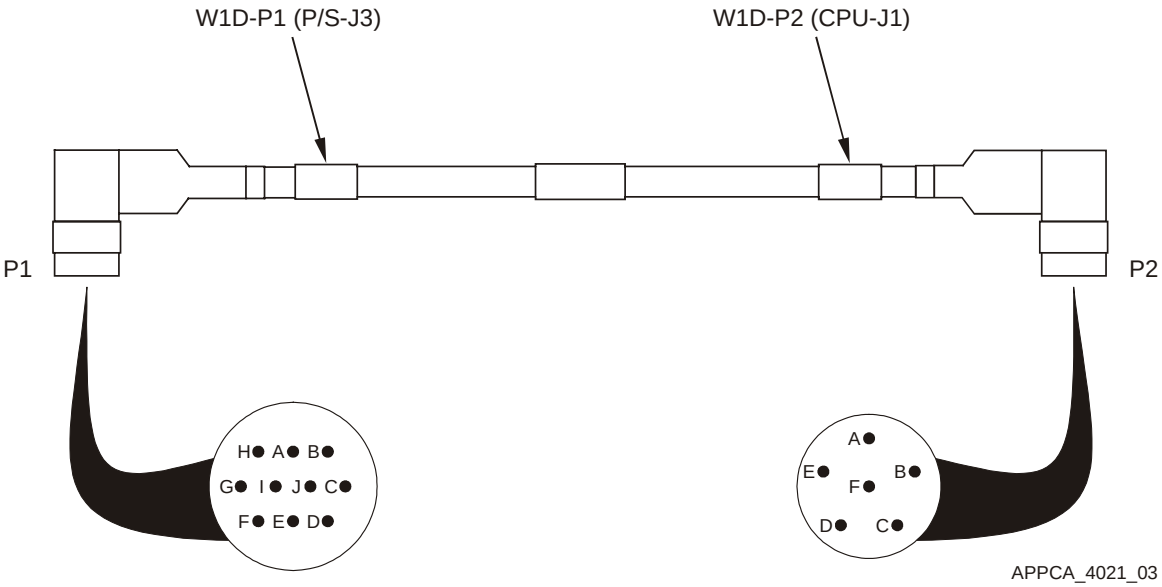

Figure E-27. W1D Cable Assembly (SICPS Tent)

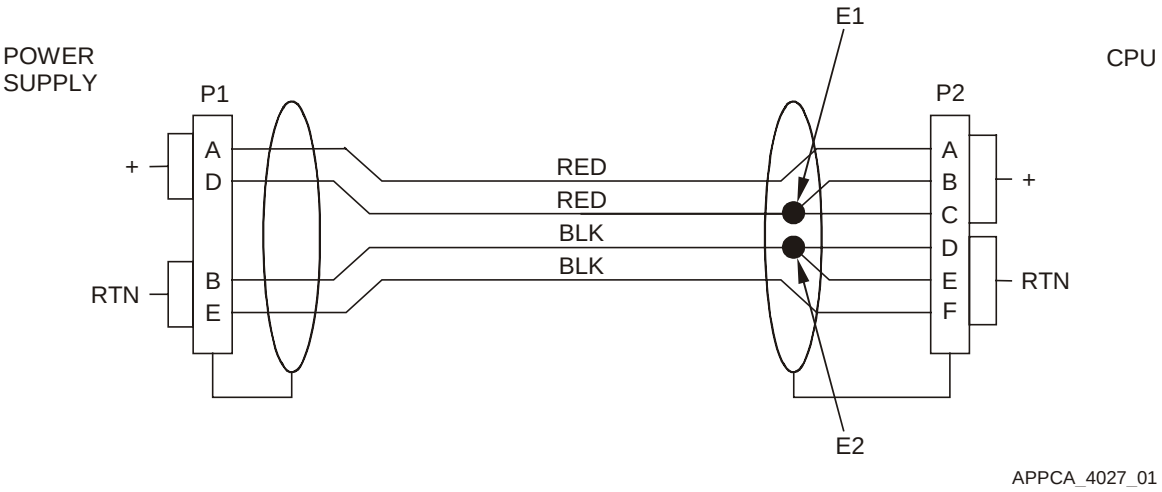

Figure E-28. W1D Wiring Diagram (SICPS Tent)

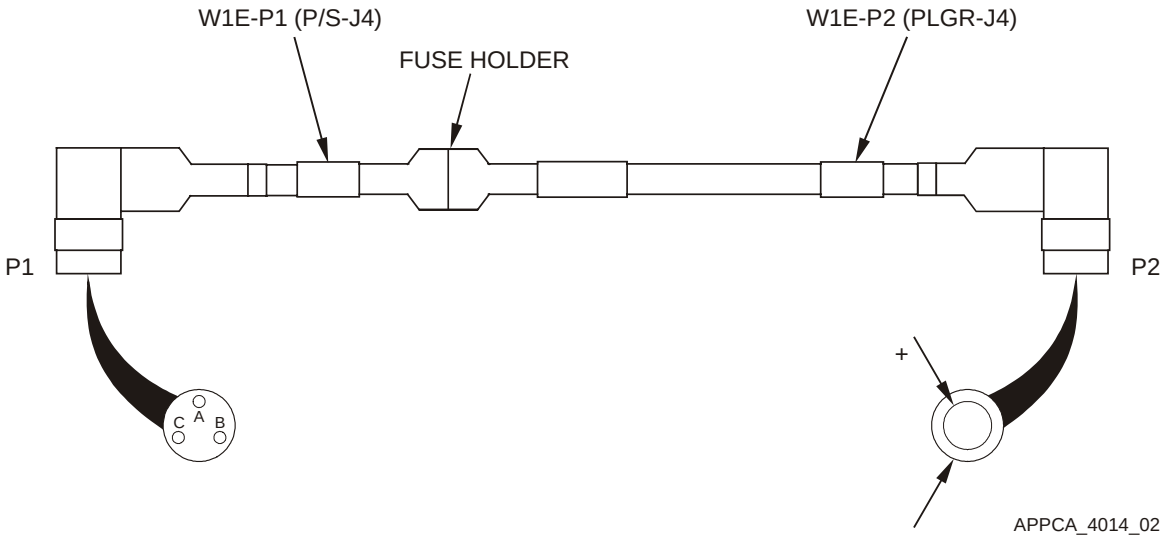

Figure E-29. W1E Cable Assembly (SICPS Tent)

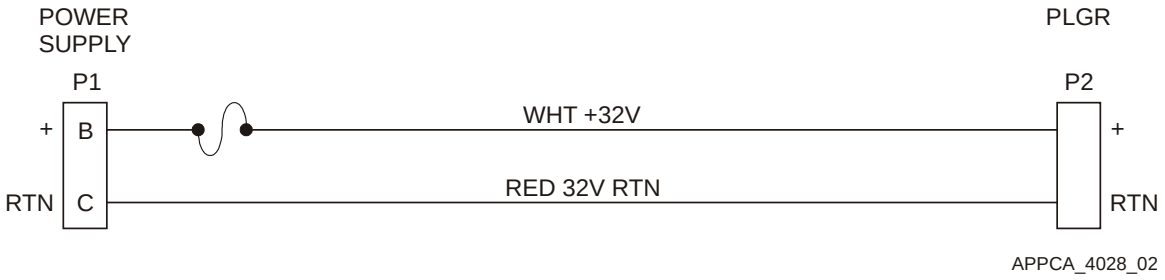

Figure E-30. W1E Wiring Diagram (SICPS Tent)

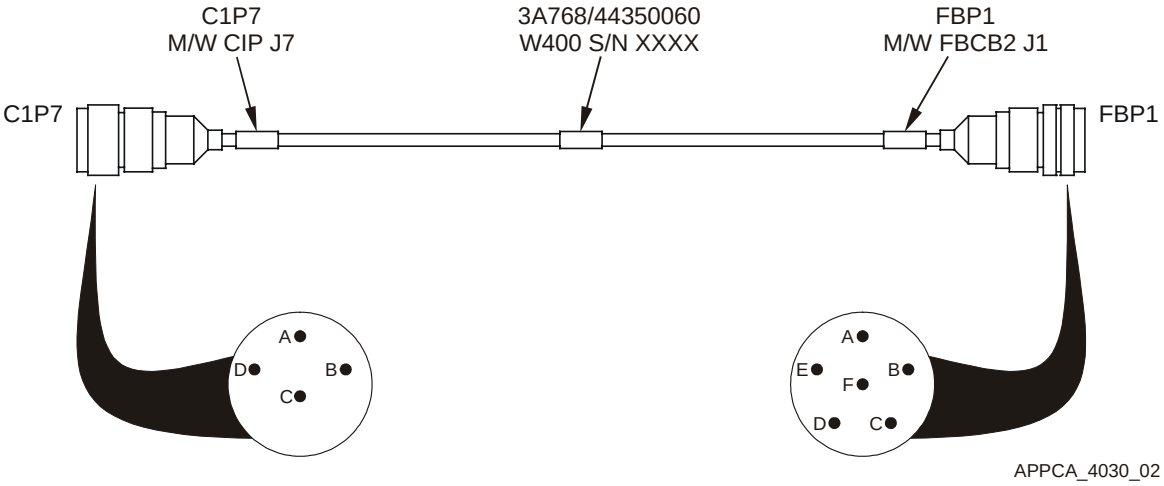

Figure E-31. W400 Cable Assembly

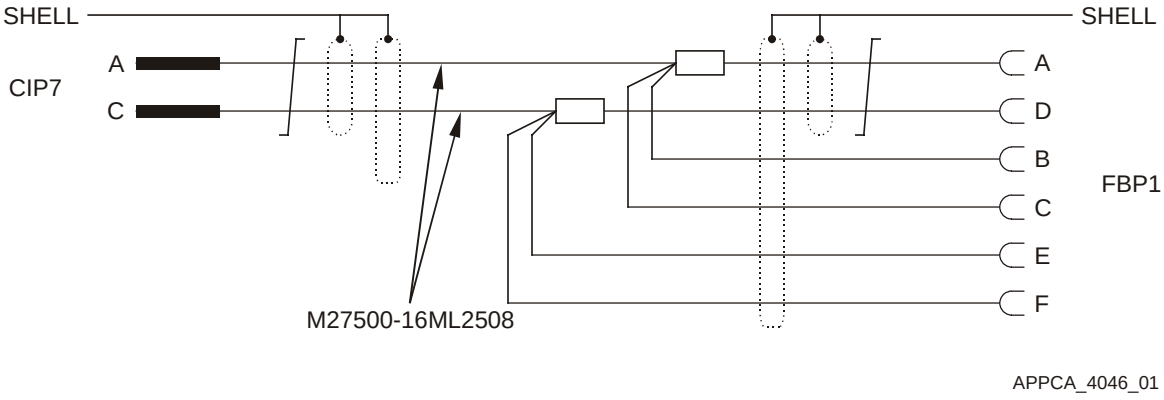

Figure E-32. W400 Wiring Diagram

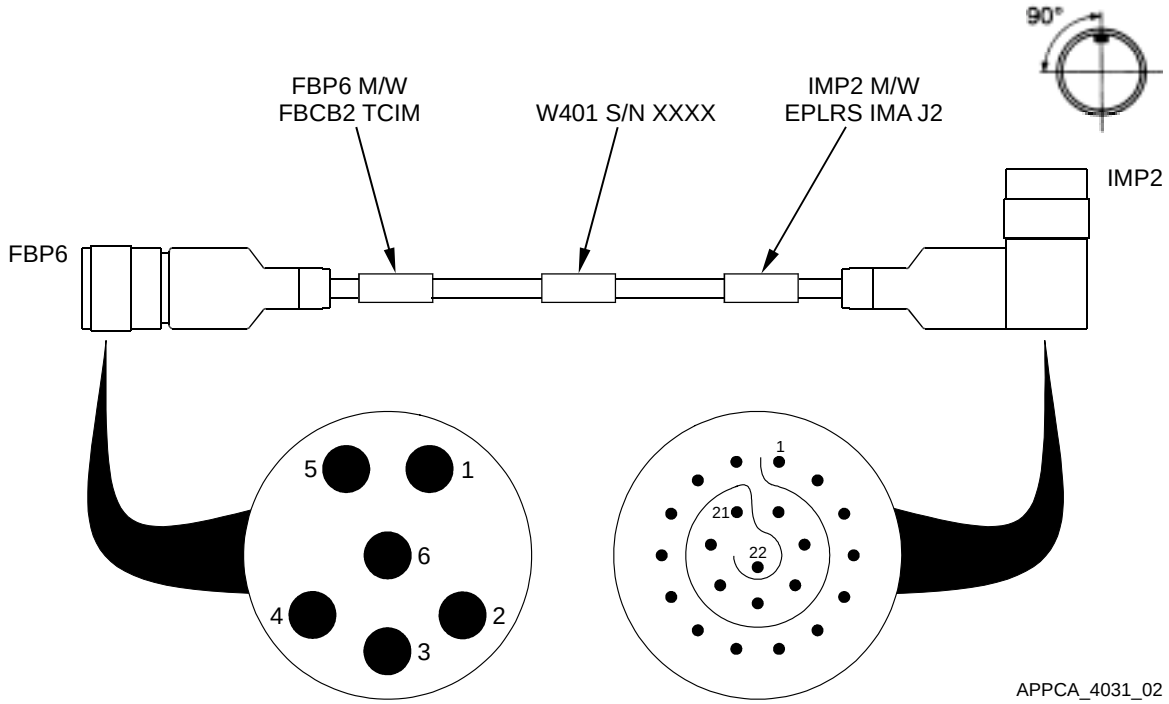

Figure E-33. W401 Cable Assembly

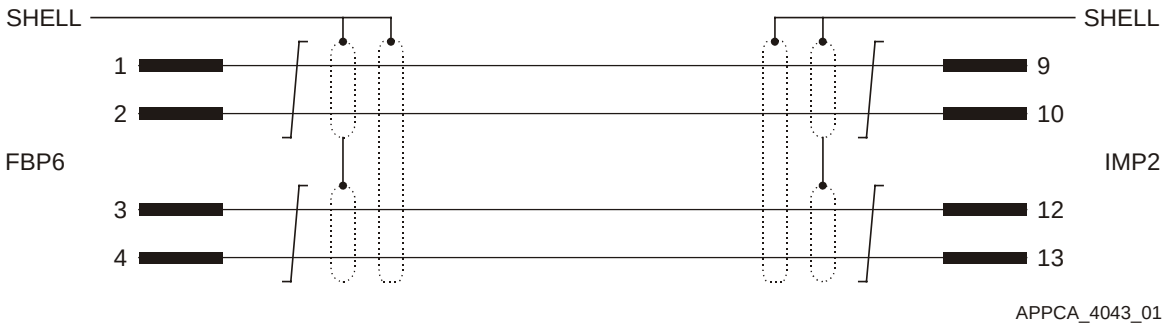

Figure E-34. W401 Wiring Diagram

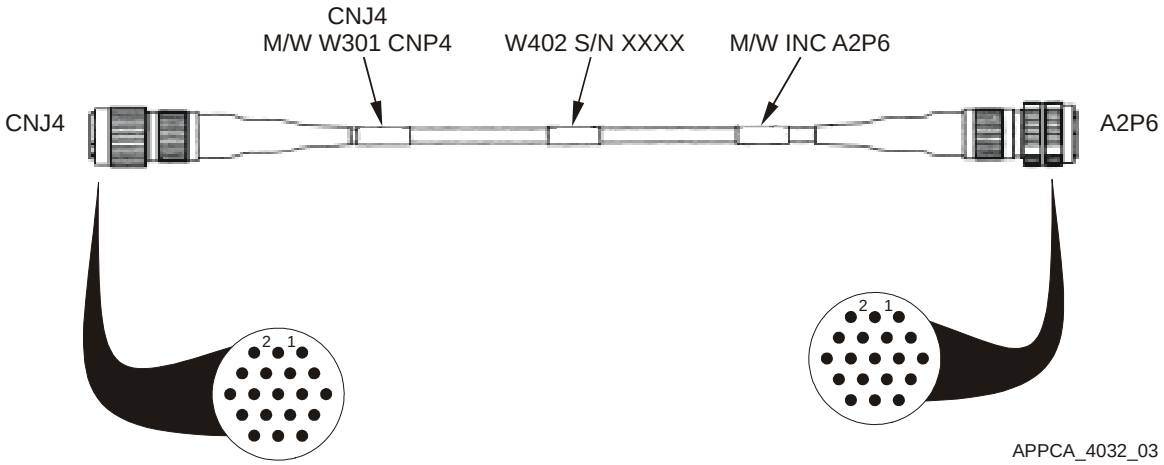

Figure E-35. W402 Cable Assembly

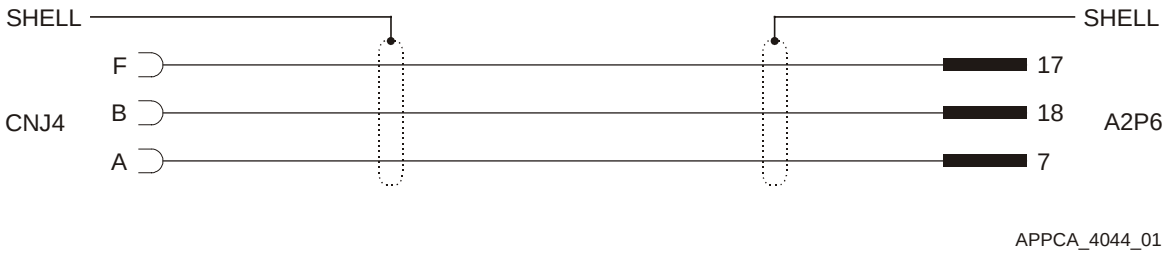

Figure E-36. W402 Wiring Diagram

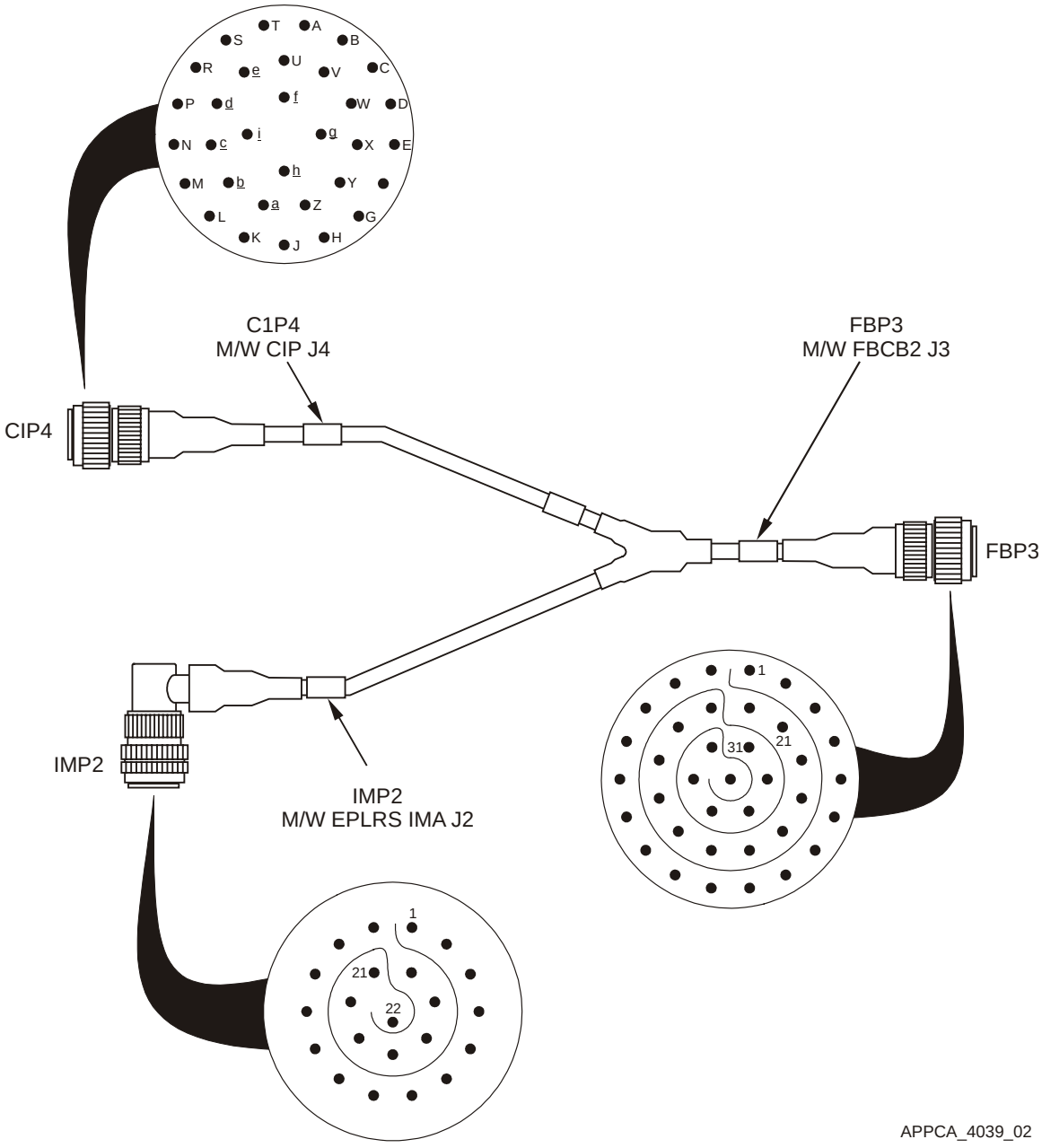

Figure E-37. W403 Cable Assembly

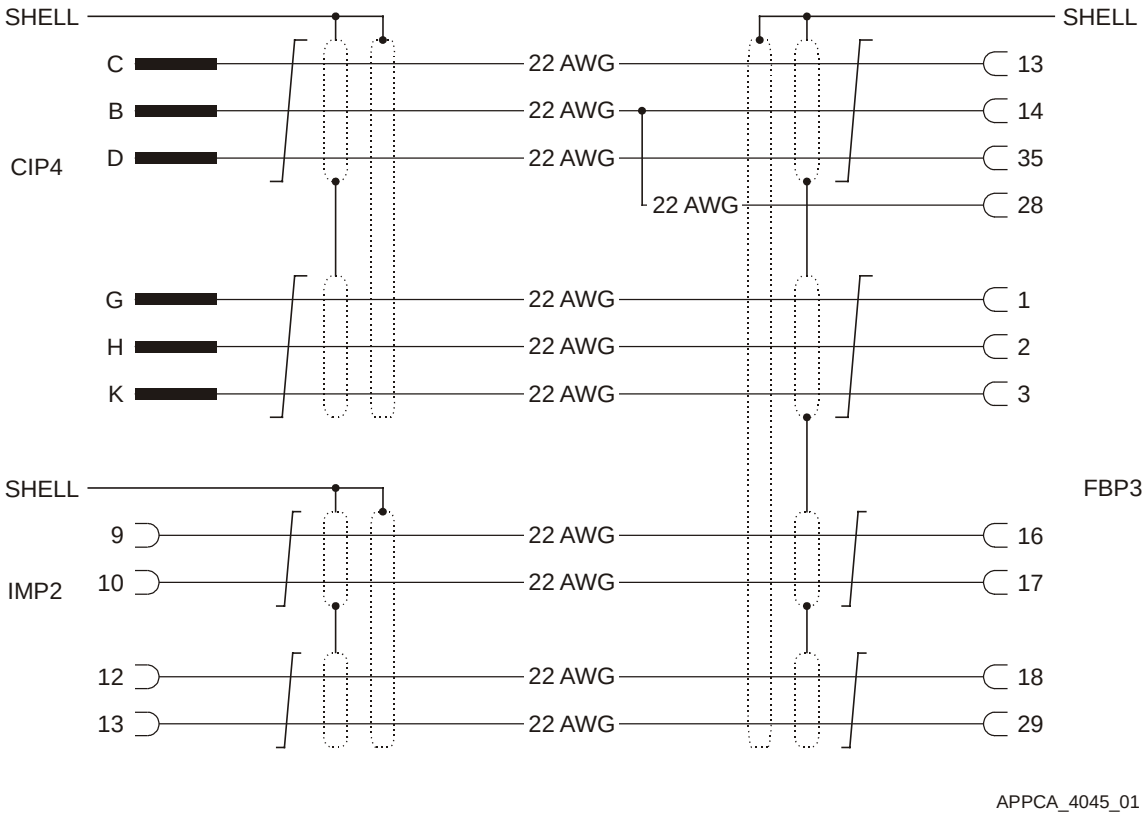

Figure E-38. W403 Wiring Diagram

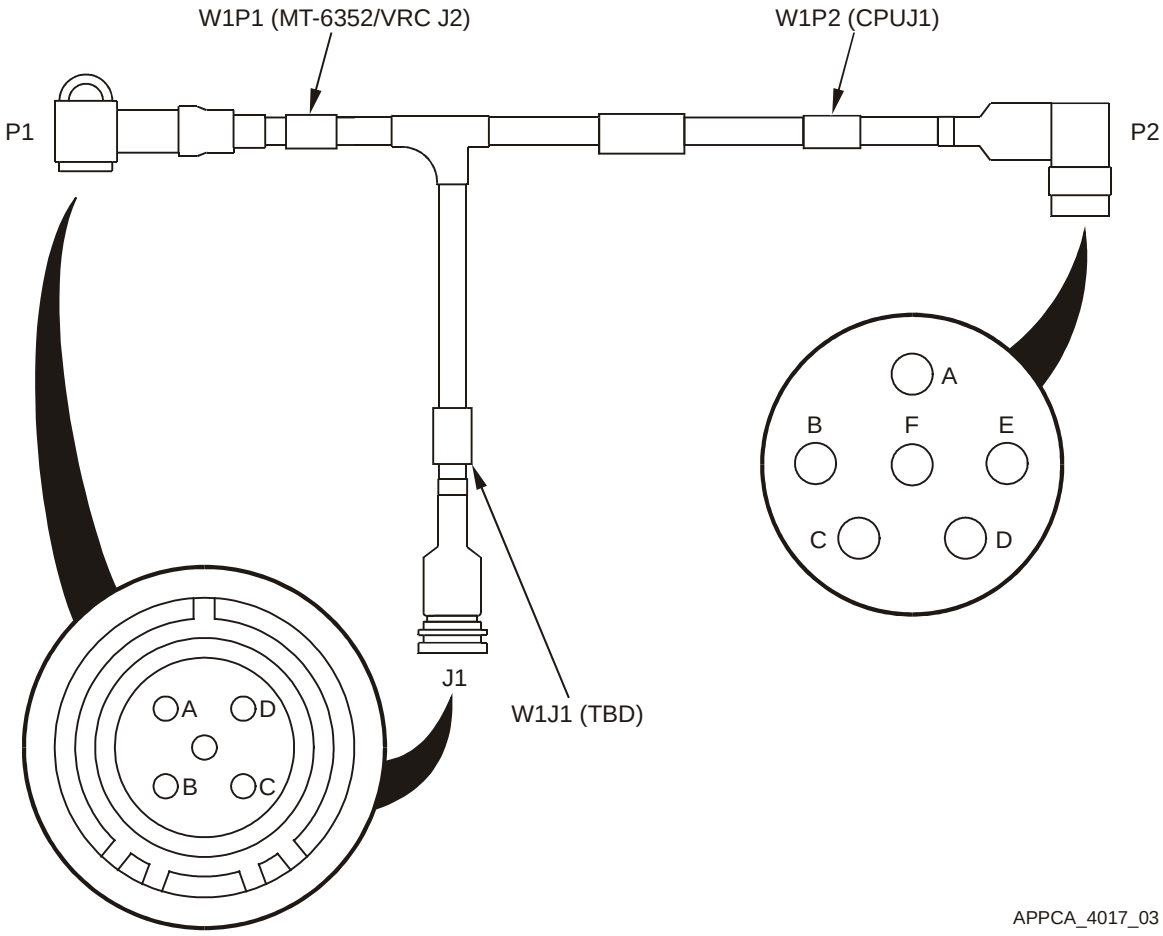

Figure E-39. W1 Cable Assembly

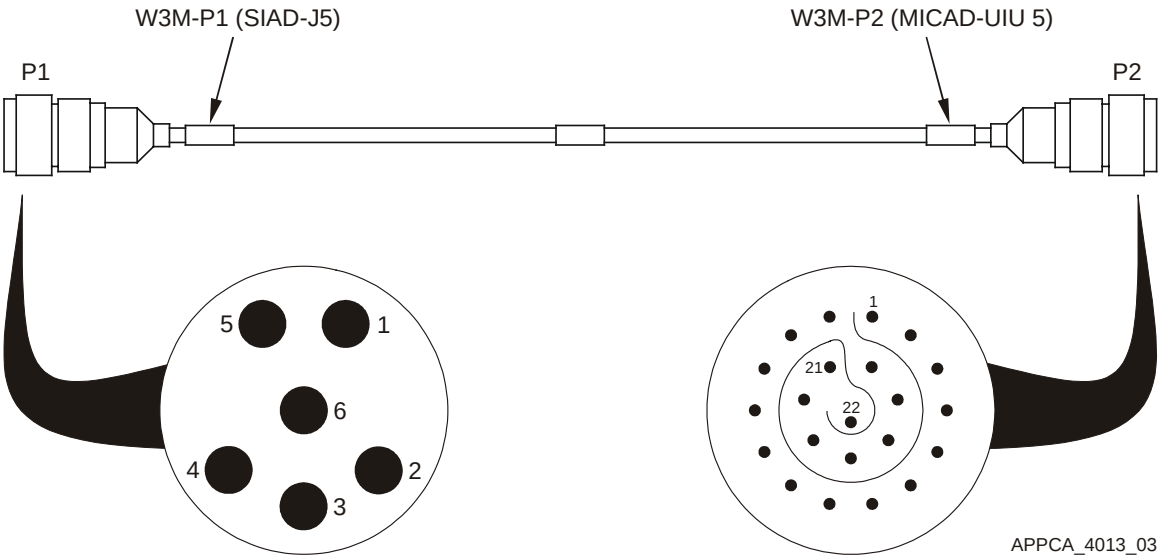

Figure E-40. W3M Cable Assembly

Figure E-41. W3M Cable Wiring Diagram

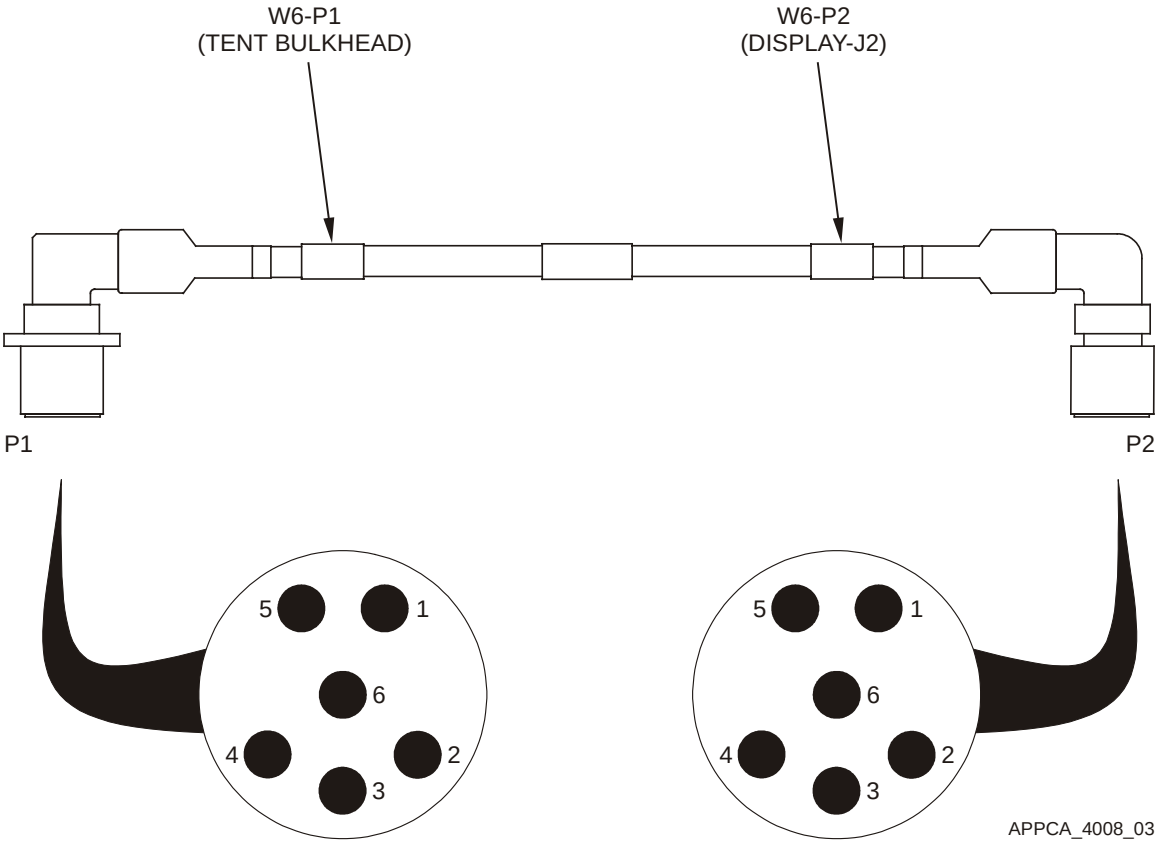

Figure E-42. W6 Cable Assembly

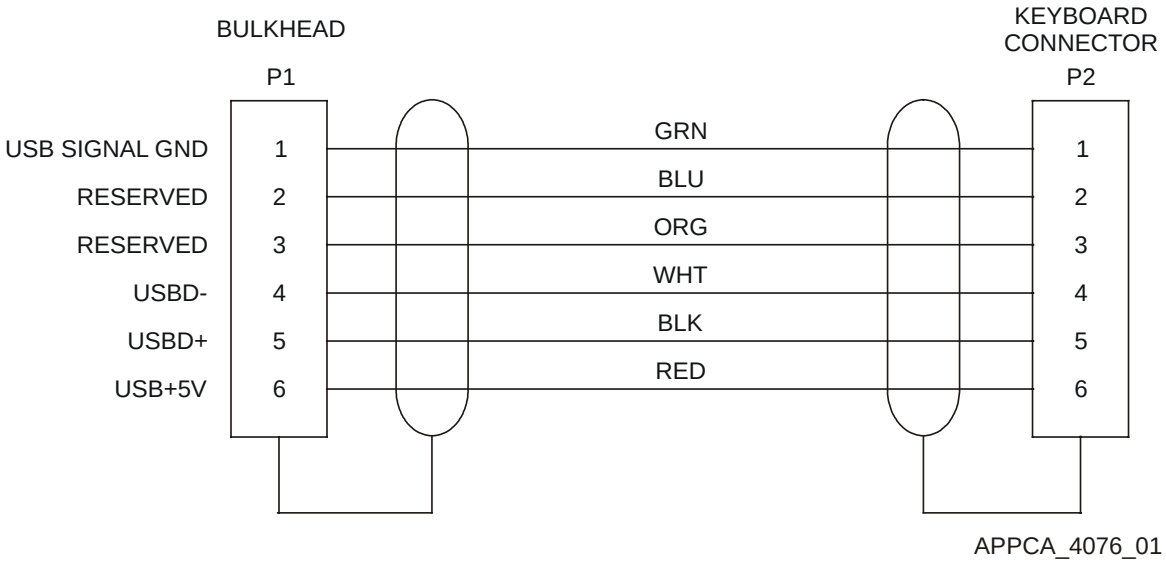

Figure E-43. W6 Wiring Diagram

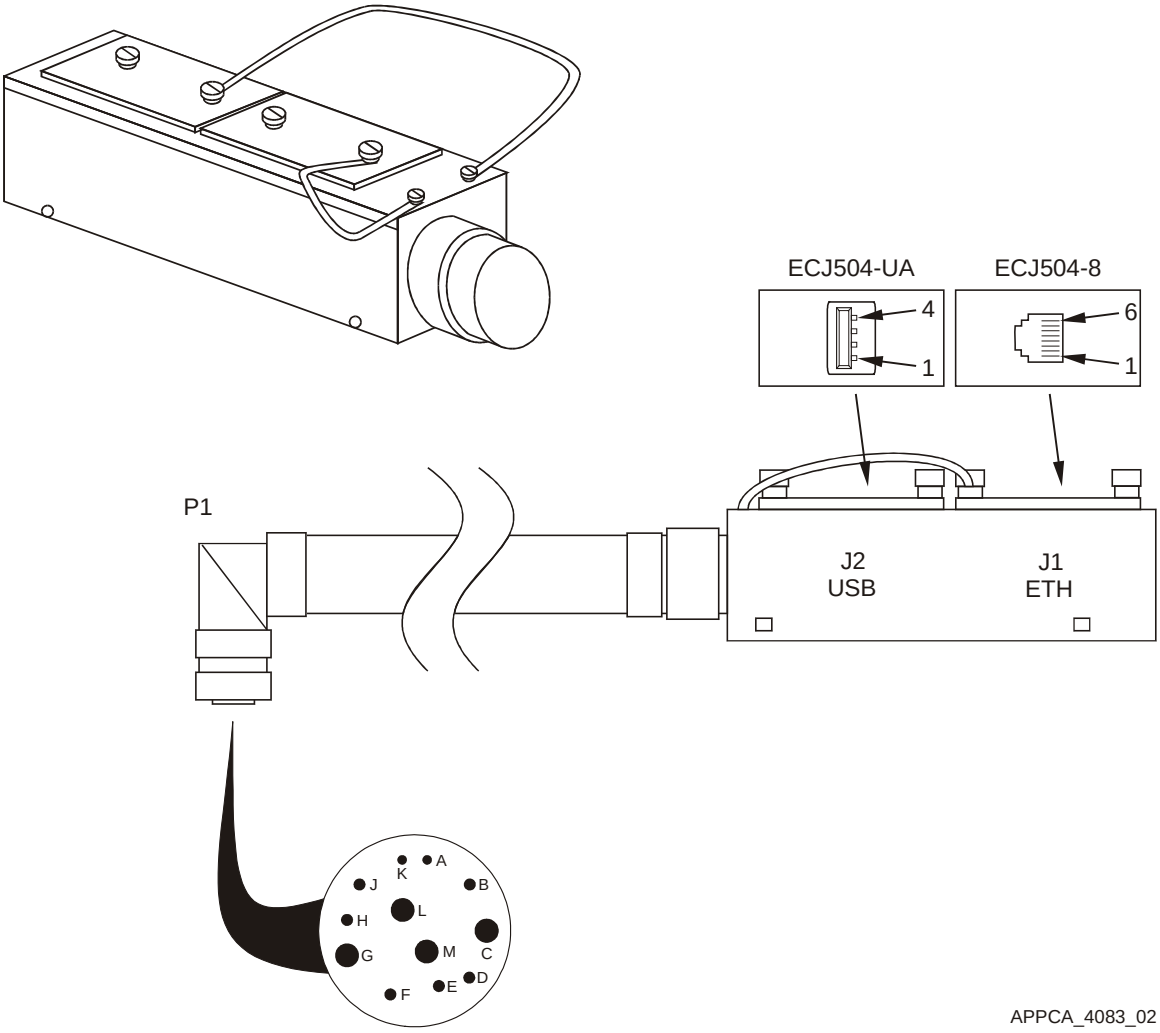

Figure E-44. W5 EIAD Cable Assembly

NOTE

The W5 Cable is an Expansion Interface Adapter Device (EIAD) used only when a vehicle is to be part of a Tactical Operations Center (TOC). When used, it is connected between the PU J5 connector (Universal Serial Bus (USB)) and the local router.

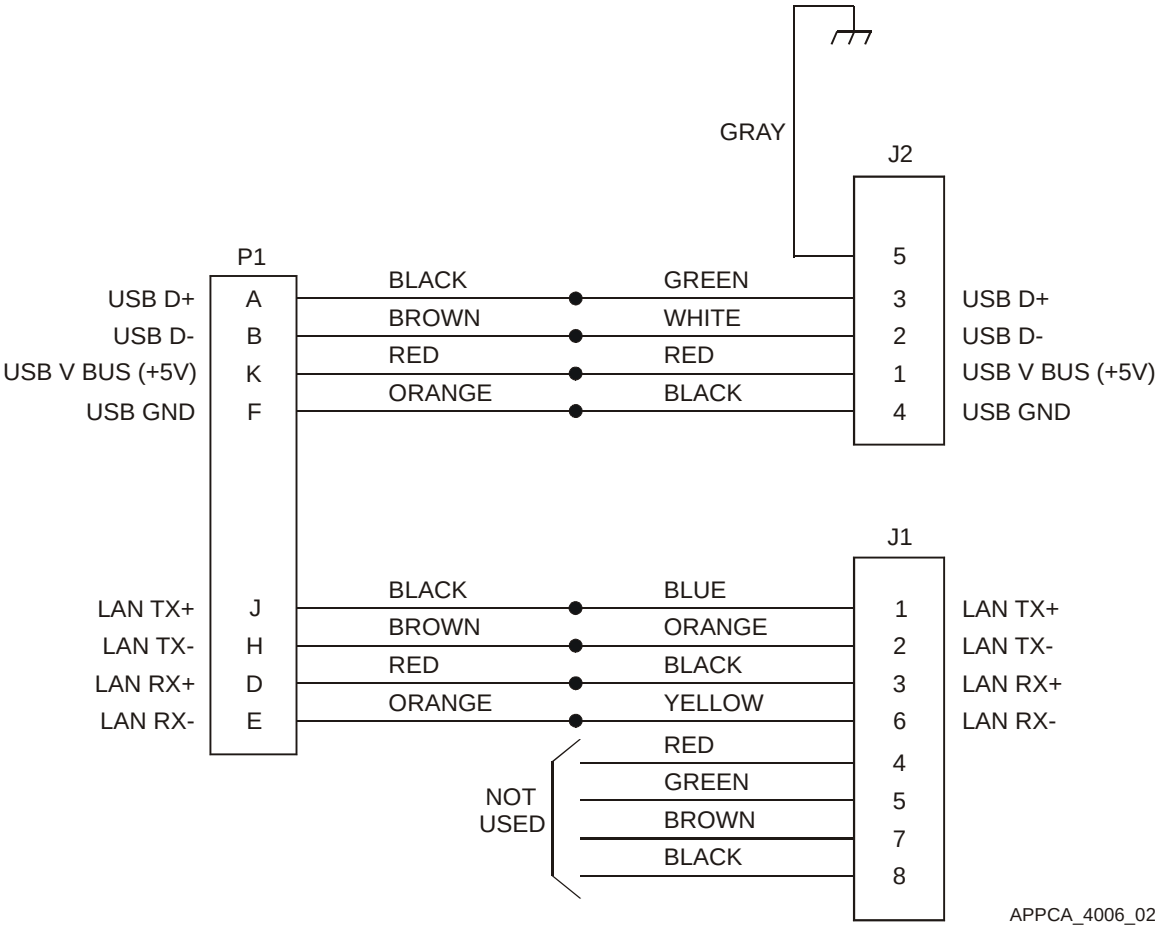

Figure E-45. W5 EIAD Wiring Diagram

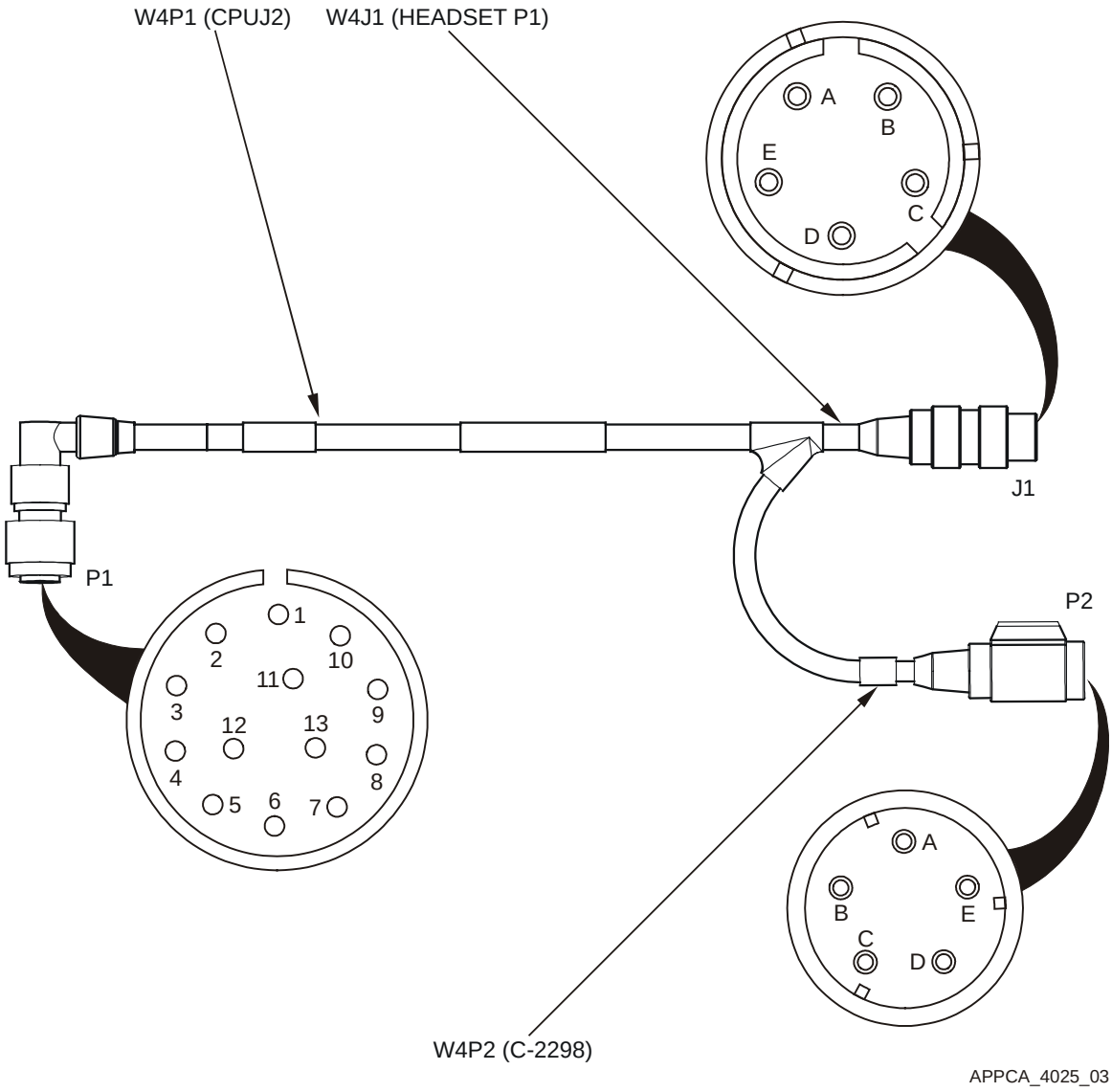

Figure E-46. W4 Cable Assembly

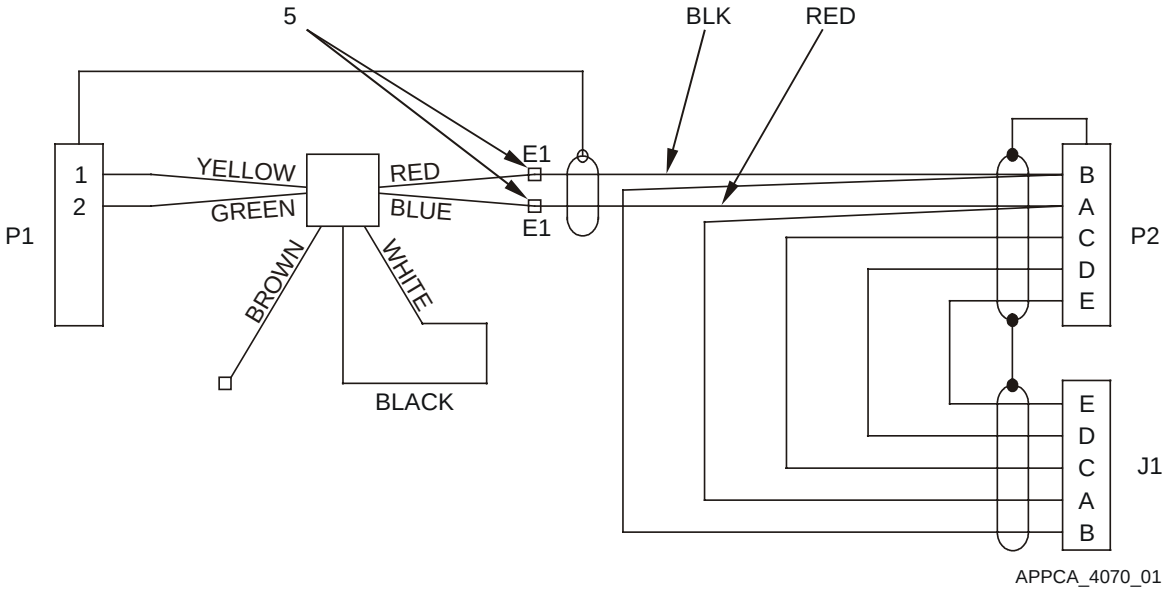

Figure E-47. W4 Wiring Diagram

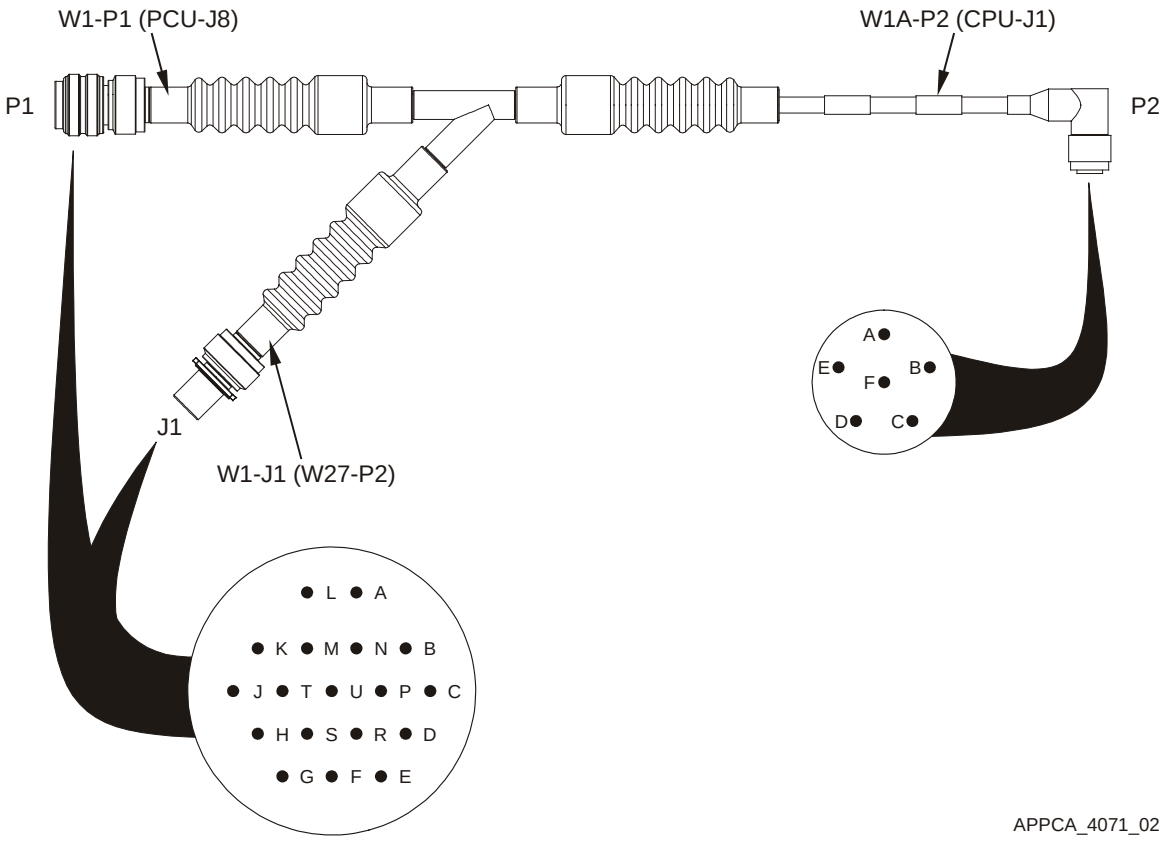

Figure E-48. W1 Power Cable Assembly

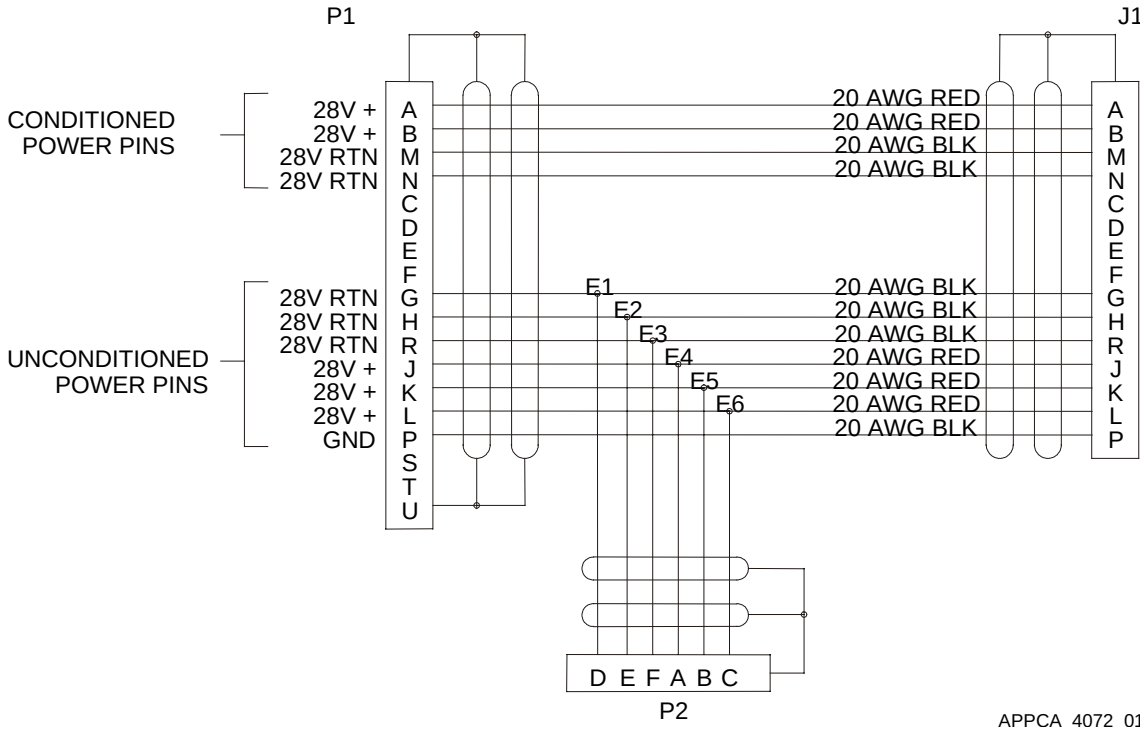

Figure E-49. W1 Power Cable Wiring Diagram

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Co. B, 1st BN, 2nd Brigade
Ft. Hood, TX 76445

DATE SENT 16 July 2001

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-7010-326-20&P	07 September 2001	Unit Maintenance Manual Computer Set, Digital AN/UYK-128(V)

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
1-14	1-19			There are two BB-388/U rechargeable batteries in my computer. Recommend clarifying as to whether one or two are used.
2-40		2-14		Figure 2-14 shows both RHDDC and battery housing assembly extended out. Should only show the RHDDC as being removed.
2-81			2-18	Table 2-18 step no 7. Should say to shutdown and then startup the AN/UYK-128(V) computer in accordance with Operator's Manual TM 11-7010-326-10.

TEAR ALONGDOTTED LINE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

John Doe SGT 532-8321

SIGN HERE

John Doe

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Fort Monmouth, New Jersey 07703-5006

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE
1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS
1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE
1 Millimeter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Millimeters = 32.82 Fluid Ounces

SQUARE MEASURE
1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

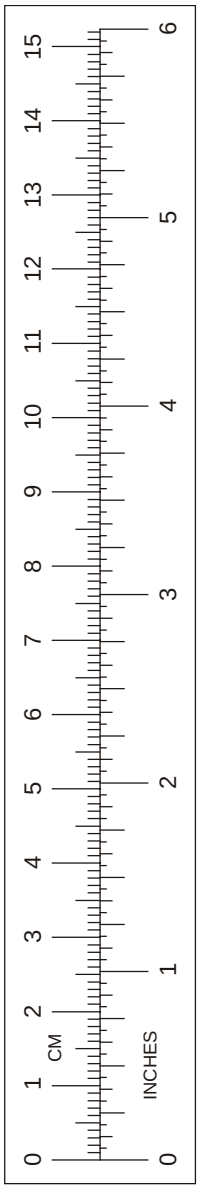
CUBIC MEASURE
1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE
5/9(°F-32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 °C + 32 = °F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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